



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30308

Site: A.L. Taylor  
Break: 17.7  
Other: \_\_\_\_\_

September 19, 1979

REF: 4AH-RM

Mr. John E. McClure  
Executive Assistant  
Department for Natural Resources &  
Environmental Protection  
Bureau of Environmental Protection  
Frankfort, Kentucky 40601

RECEIVED

SEP 24 1979

Dept. for Natural Resources & Environmental  
Protection Commissioner's Office  
Bureau of Environmental Protection

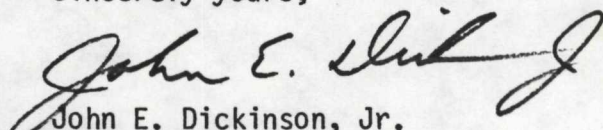
Dear Mr. McClure:

In response to your letter of August 23, 1979, enclosed are the available preliminary and final reports dealing with sites that the EPA has studied in the Commonwealth of Kentucky.

Final reports have not been completed for the environmental monitoring activities conducted at the drum storage facilities near Louisville, the A. L. Taylor or the Brickyard sites. Metals analysis from coring activity at the 13.68 Acre Farm site is complete and includes those samples taken at the Upper Pond Creek site. A final report on the Howe Valley Landfill study is included; however, additional sampling and analysis has been arranged for this site to more clearly define any potential problem.

As more reports are received by our office, they will be forwarded to you. If you have any questions or comments, please do not hesitate to contact me at (404) 881-3016.

Sincerely yours,

  
John E. Dickinson, Jr.  
Chemical Engineer

Enclosure



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# U.S. EPA REGION IV

## SDMS

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: MAR 20 1979

SUBJECT: Investigation of Possible Groundwater Contamination, Lee's Lane  
Landfill, Louisville, Kentucky

FROM: (wfr) Water Surveillance Branch

Addressees

TO:

SUMMARY

Enclosed is a copy of the final report and analytical data for the groundwater investigations conducted in the vicinity of the Lee's Lane Landfill, Louisville, Kentucky during November 20-21 and December 14, 1978.

ACTION

For your information and use.

BACKGROUND

Memos dated December 8 and December 22, 1978 from William R. Davis to Sara Turnipseed.

Addressees:

Enforcement Division

Paul Traina

Sara Turnipseed

Water Division

Gary Hutchinson/Mark McClanahan

Ron Mikulak

Air & Hazardous Materials Division

Tom Devine /

Jim Scarborough/John Dickinson

S & A Division

Jim Finger/Billy Adams

Doug Lair/Mike Carter

Tom Bennett/Bobby Carroll

Enclosures

GROUNDWATER MONITORING INVESTIGATION  
LEE'S LANE LANDFILL  
LOUISVILLE, KENTUCKY  
NOVEMBER-DECEMBER, 1978

INTRODUCTION

In response to a request by the Enforcement Division, Region IV, US-EPA, Surveillance and Analysis Division (SAD) personnel collected groundwater samples from eleven private wells in the vicinity of Lee's Lane Landfill. This investigation was conducted as part of an overall waste site investigation in conjunction with the Air Surveillance Branch. The groundwater sampling program was conducted to determine if the aquifer immediately underlying Lee's Lane Landfill was being contaminated by leachate from the landfill. The study was limited to eleven private wells located immediately adjacent to the landfill. These wells were sampled in November during a period of normal Ohio River stage. Five of the eleven wells were resampled during December when the Ohio River was in flood stage.

Data collected during the study and additional hydrogeological data that will be generated from future USGS-Jefferson County Health Department studies can be used to design any needed future monitoring programs for this area.

RESULTS AND DISCUSSION

Based on data gathered during the two sampling investigations, there is no indication that the aquifer immediately underlying the Lee's Lane Landfill is contaminated with either metals or organic compounds from leachate intrusion. Grab samples were collected from eleven private wells in a residential area located in the vicinity of Lee's Lane Landfill in Louisville, KY during November 20-21, 1978 (normal river stage). Five of these wells were resampled on December 14, 1978, during a period of high water in the Ohio River. These wells were resampled because it was thought the local groundwater gradient might reverse during high river stages (ie. , the aquifer might be recharged by the River). If this situation had occurred, leachate that might be draining into the river, could have been forced upgradient into the wells. Figure 1 is a map of the sampling area showing the location of the wells. Table 1 lists addressees of the wells sampled along with the pertinent laboratory and field numbers. Attachments 1-3 contain analytical data for water samples collected during November and December 1978. The field sheets used to document sample collection are included as Attachments 4-21.

No volatile organic compounds were detected in the eleven well samples collected in November, or in the five wells resampled during the December study. See Attachment 1 for analytical results.



Extractable organic analyses using gas chromatography/flame ionization detection (screening techniques) was conducted on all samples collected during both sampling periods. Gas chromatography/mass spectrometry analysis were performed on three well samples, PU-519 (6519 Putman St.), WM-408 (4408 Wilmoth Ave.), and WL-416 (4416 Wilshire Blvd.), which contained chromatographic peaks in the screening process (see Attachment 3). These peaks were tentatively identified as diethyl phthalate which was detected at low concentrations. This compound was also found in the laboratory blank and indicates a contamination problem. Also, 7 to 10 hydrocarbon compounds were detected at an estimated concentration of 510  $\mu$ g/l in sample PU-519 (6519 Putman St.).

A complete metals analysis was performed for all the samples collected during the November study. No metals of significant concentration were detected, in these samples with the exception of sample PU-519. This sample was collected from a hand pump, and the well had not been used for years. See Attachment 2 for metals data. Metal analyses were not conducted on any of the samples collected in December.

#### Sample Methodology

The spigots at each well site were allowed to run for approximately five minutes before the samples were collected in standard US-EPA, Region IV sample containers. The samples were kept on ice and chain-of-custody was maintained for all samples collected. In order to meet holding time constraints and sample shipping regulations, the samples were transported by private aircraft.

#### Sample Analysis

All samples were analyzed by the SAD, Laboratory Services Branch. Specific analytical methodologies are included in Attachments 1 and 3.

TABLE 1  
PRIVATE WELLS SAMPLED  
VICINITY OF LEE'S LANE LANDFILL  
LOUISVILLE, KENTUCKY  
NOVEMBER--DECEMBER 1978

US-EPA LAB NO.	US-EPA STATION NO.	DATE	ADDRESS
78C-3302	PU-519	11/20-21/78	Mr. Lowell Wright, 6519 Putman St.
78C-3301	LE-416	"	Mr. Martin Faircloth, 4416 Lee's Lane
78C-3300	HO-508	"	Mr. Cecil Simpson, 6508 Howard Ave.
78C-3307	WL-416	"	Mr. T. O. Frankie, 4416 Wilshire Blvd.
78C-3306	WM-422	"	Mr. Joseph Downs, 4422 Wilmoth Ave.
78C-3308	LE-405	"	Mr. Morris Parker, 4405 Lee's Lane
78C-3309	PU-503	"	Mr. William Hayburn, 6503 Putman St.
78C-3310	LU-614	"	Mr. James Salleng, 6614 Lucerne St.
78C-3305	LU-604	"	Mr. James Mann, 6604 Lucerne St.
78C-3304	ME-616	"	Mr. Ray Wright, 6616 Melrose St.
78C-3303	WM-408	"	Mr. Ashley (tenant), 4408 Wilmoth Ave.
78C-3495	HO-508	12/14/78	Mr. Cecil Simpson, 6508 Howard Ave.
78C-3494	WM-422	"	Mr. Joseph Downs, 4422 Wilmoth Ave.
78C-3496	ME-616	"	Mr. Ray Wright, 6616 Melrose St.
78C-3493	WM-408	"	Mr. Ashley (tenant), 4408 Wilmoth Ave.
78C-3497	PU-503	"	Mr. William Hayburn, 6503 Putman St.

# OHIO RIVER

FIGURE 1  
LEE'S LANE LANDFILL  
WELL SAMPLING LOCATIONS  
NOVEMBER-DECEMBER 1978

LANDFILL SEC. III

LANDFILL SEC.

FLOODWALL

HO-508  
6508

HOWARD

4416  
LE-416

PUTMAN

ST

ME-616  
6616

6519  
PU-519

6503  
PU-503

4405  
LE-405

MELROSE

ST

LU-614  
6614

LU-604  
6604

LUCERNE

ST

WESTERN

LARCHMONT

LANE

AVE

AVE

LANDFILL SEC.

4422  
WM-422

WM-403  
4403

WL-416  
4416

WILSHIRE

WILMOTH

UNIT STATES ENVIRONMENTAL PROT. ION AGENCY

Region IV, Athens, GA

DATE: December 20, 1978

SUBJECT: Results of Metals and Volatile Organic Analysis of Water Samples  
from Lee's Lane Landfill, Louisville, Kentucky

FROM: Chief, Analytical Services Section  
Laboratory Services Branch

TO: Mike Carter, Chief  
Water Surveillance Branch

Attached are results of metals and volatile organic analyses on  
two sets of samples from the subject landfill.

- 1) 78C 3300 - 3310A, collected on 11/20 and 11/21/78 and  
received by the Laboratory Services Branch on 11/21/78.
- 2) 78C 3493 - 3497, collected on 12/14/78 and received by  
the Laboratory Services Branch on 12/15/78.

Copies of the field collection sheets are also attached.

No analyses of extractable organic compounds has been performed  
to date. These will be reported when completed.



Tom B. Bennett, Jr.

Enclosures

ATTACHMENT 1  
VOLATILE ORGANICS ANALYSIS (VOA) DATA

CHEMIST E. W. JOY

RECEIVED 11/21/78

COMPLETED 12/1,

[illegible]



COMPLETED 12/16/78

[illegible]

Lee's Lane Landfill  
Louisville, Kentucky

FIELD STATION NO. DURS	STARTING DATE	START TIME	ENDING DATE	END TIME	78C SAD SAMPLE NUMBER	1- ANTIMONY TOTAL ug/l	2- ARSENIC TOTAL ug/l	3- BARIUM TOTAL ug/l	4- CADMIUM TOTAL ug/l	5- CHROMIUM TOTAL ug/l	6- COPPER TOTAL ug/l	7- CALCIUM TOTAL ug/l	8- LEAD TOTAL ug/l	9- MERCURY TOTAL ug/l	10- NICKEL TOTAL ug/l	11- MAGNESIUM TOTAL ug/l	12- SELENIUM TOTAL ug/l	13- SILVER TOTAL ug/l	14- TIUM TOTAL ug/l	15- ZINC TOTAL ug/l	16- IRON TOTAL ug/l	17- TOC mg/l
NO-508	11/20/78	1745			3300	<25	<25	<10	<10	<10	<10	95000	<25	NA	<20	33000	<25	<10	110	3090	<100	<1
LE-416	11/20/78	1715			3301	<25	<25	<10	<10	<10	18	20000	<25	NA	<20	32000	<25	<10	103	309	<100	1.2
PU-519	11/20/78	1645			3302	<40	<25	<10	<20	28	25570	100000	1144	NA	<40	35000	<25	<20	510	81880	33000	3.2
WM-403	11/21/78	1039			3303	<25	<25	<10	<10	<10	18	129000	<30	NA	<20	44000	<25	<10	164	602	<100	2.8
FE-616	11/21/78	1016			3304	<25	<25	<10	<10	<10	20	98000	<25	NA	<20	35000	<25	<10	115	2067	<100	1.0
LU-604	11/21/78	0953			3305	<25	<25	<10	<10	<10	14	95000	31	NA	<20	34000	<25	<10	110	3992	<100	<1
WE-422	11/20/78	1800			3306	<25	<25	<10	<10	<10	12	108000	31	NA	<20	38000	<25	<10	134	881	<100	<1
GL-116	11/20/78	1750			3307	<25	<25	<10	<10	<10	144	124000	121	NA	<20	41000	<25	<10	148	3486	6800	<1
LE-405	11/21/78	0830			3308	<25	<25	<10	<10	<10	13	20000	<25	NA	<20	32000	<25	<10	104	828	<100	<1
PO-503	11/21/78	0845			3309	<25	<25	<10	<10	<10	16	21000	<30	NA	<20	33000	<25	<10	105	769	<100	<1
LU-314	11/21/78	0935			3310	<25	<25	<10	<10	<10	13	100000	<25	NA	<20	36000	<25	<10	121	343	<100	1.3
WM-408	12/14/78	1440			3493	<25	<25	<10	<10	<10	<10	147000	<25	NA	<20	52000	<25	<10	195	903	<100	<1
WE-422	12/14/78	1430			3494	<25	<25	<10	<10	<10	10	100000	<25	NA	<20	35000	<25	<10	123	1128	200	<1
PO-508	12/14/78	1410			3495	<25	<25	<10	<10	<10	<10	92000	<25	NA	<20	32000	<25	<10	108	3595	<100	<1
FE-616	12/14/78	2015			3496	<25	<25	<10	<10	<10	14	100000	<25	NA	<20	36000	<25	<10	118	2108	<100	<1
PU-503	12/14/78	2045			3497	<25	<25	<10	<10	<10	13	90000	<25	NA	<20	32000	<25	<10	105	789	<100	<1
					3302	- Has a trace of Tin - Approximately 90 ug/l																

NA - Not analyzed for.

NAI - Not able to analyze due to interferences.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region IV, Athens, GA

DATE: January 18, 1979

SUBJECT: Results of Extractable Organic Analyses, Lee's Lane Landfill,  
Louisville, Kentucky

FROM: Chief, Analytical Services Section  
Laboratory Services Branch

TO: Mike Carter, Chief  
Water Surveillance Branch

Attached are results of subject analyses. Refer to memo, Bennett to Carter, December 20, 1978 for other results of analyses and field sampling sheets.

No extractable organics were detected in the following samples by gas chromatography/flame ionization detection: 79C-3300; 79C-3301; 79C-3304; 79C-3305; 79C-3306; 79C-3308; 79C-3309; 79C-3310; 79C-3493-97. The minimum detection limit was 2ug/l.

The attached list shows the results of a gas chromatograph/mass spectrometry analysis of sample numbers 79C-3302, 79C-3303, and 79C-3307. No other extractable organics were detected in these samples with a minimum detection limit of 2ug/l.

This completes all analyses on water samples collected to date from Lee's Lane Landfill.

*Tom B.*

Tom B. Bennett, Jr.

Enclosure

ATTACHMENT 3  
Extractable Organics Analysis Data  
Analyses Conducted On Samples Previously  
Screened by Gas Chromatography

<u>SAD NUMBER</u>	<u>ESTIMATED CONCENTRATION ug/l</u>
79C-3302	
7-10 petroleum hydrocarbon types	510
diethyl phthalate	2.2 <sup>1/</sup>
79C-3303	
diethyl phthalate	T<2 <sup>1/</sup>
79C-3307	
diethyl phthalate	13.0 <sup>1/</sup>
Laboratory Analysis Blank	
diethyl phthalate	2.5

<sup>1/</sup> Detection of the reported concentration of diethyl phthalate in the laboratory blank is indicative of field or laboratory contamination. The reported data for diethyl phthalate should be discounted due to the contamination problem.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ATHENS, GEORGIA 30605

DATE: JUL 17 1979

SUBJECT: Extractable Organics, Pesticide and PCB Analyses, Larue County  
Landfill, Hodgenville, KY

FROM: Water Surveillance Branch

TO: ✓ Devine/Scarborough

SUMMARY

Attached are the data for the extractable organics collected during the study conducted during the week of April 16, 1979. The initial report has been sent to you and included preliminary information on the extractable organic findings. As previously reported, the Grant's, Dye's and Raines' wells were free of organic contamination. The leachate stream did contain a trace <10 µg/l of bis (2-ethylhexyl) phthalate. This completes the reporting of all analytical data for the Larue County Landfill study.

ACTION

For your information.

BACKGROUND

Memo from Asa B. Foster, Jr. to Jim Finger requesting S&A investigation, dated March 12, 1979, and memo from W. R. Davis to addressees, Larue County Landfill and Water Supply Investigation, dated June 22, 1979.

*William R. Davis*  
William R. Davis

Attachments

cc: Harvey  
Turnipseed  
Allen  
Traina  
Hutchinson  
McClanahan  
Humphries  
Finger/Carter/Lair



PROJECT Large County Landfill  
Hodgensville, KY

CI

ST E. W. Loy, Jr

REC'D. 4/20/79 COMPL'D.

13/79

NO.	79C 1033		
SOURCE & STATION	L-1 Leachate Stream		
DATE/TIME	4-19-79 @ 0930		
Compounds on ERDC List of Priority Pollutants	Estimated Concen- tration ug/l	Estimated Concen- tration	Estimated Concen- tration
bis(chloromethyl) ether	NA	NA	NA
N-nitrosodimethylamine	NA		
1,2-dichlorobenzene	ND(10)		
1,3-dichlorobenzene	ND(10)		
1,4-dichlorobenzene	ND(10)		
bis(2-chloroethyl) ether	ND(10)		
hexachloroethane	ND(10)		
bis(2-chloroisopropyl) ether	ND(10)		
N-nitrosodi-n-propylamine	ND(10)		
nitrobenzene	ND(10)		
hexachlorobutadiene	ND(10)		
1,2,4-trichlorobenzene	ND(10)		
naphthalene	ND(10)		
bis(2-chloroethoxy) methane	ND(10)		
isophorone	ND(10)		
hexachlorocyclopentadiene	ND(10)		
2-chloronaphthalene	ND(10)		
acenaphthylene	ND(10)		
acenaphthene	ND(10)		
dimethyl phthalate	ND(10)		
2,4-dinitrotoluene	ND(10)		
2,6-dinitrotoluene	ND(10)		
4-chlorophenyl phenyl ether	ND(10)		
fluorene	ND(10)		
diethyl phthalate	ND(10)		
1,2-diphenylhydrazine 2/	ND(10)		
N-nitrosodiphenylamine 3/	ND(10)		
hexachlorobenzene	ND(10)		
4-bromophenyl phenyl ether	ND(10)		
phenanthrene 4/	ND(10)		
anthracene 4/	ND(10)		
di-n-butyl phthalate	ND(10)		
fluoranthene	ND(10)		
pyrene	ND(10)		
butyl benzyl phthalate	ND(10)		
benzidine	NA		
bis(2-ethylhexyl) phthalate	T <10		
chrysene 5/	ND(10)		
1,2-benzanthracene 5/			
3,3'-dichlorobenzidine	ND(10)		
di-n-octyl phthalate	ND(10)		
3,4-benzofluoranthene 6/			
11,12-benzofluoranthene 6/	NA		
3,4-benzopyrene	NA		
indeno (1,2,3-cd) pyrene	NA		
1,2,5,6-dibenzanthracene	NA		
1,12-benzoperylene	NA		
2-chlorophenol	ND(10)		
2-nitrophenol	ND(10)		
phenol (GC/MS)	ND(10)		
2,4-dimethylphenol	ND(10)		
2,4-dichlorophenol	ND(10)		
2,4,6-trichlorophenol	ND(10)		
parachlorometa cresol	ND(10)		
2,4-dinitrophenol	ND(10)		
4,6-dinitro-o-cresol	ND(10)		
pentachlorophenol	ND(10)		
4-nitrophenol	ND(10)		

- Trace.
- None detected at greater than Minimum Detection Limit (number in parenthesis).
- Not Analyzed.
- Tentative Identification.
- and/or azobenzene.
- and/or diphenylamine.
- Phenanthrene and/or anthracene.
- Chrysene and/or 1,2-benzanthracene.
- 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

(OVER)

PROJECT Large County Landfill  
Hodgensville, KY

ST E. W. Loy, Jr. REC'D. 4/20/79 COMPL

3/79

AD NO.	79C 1034	79C 1035	
SOURCE & STATION	WR-1 Raines Well	WG-1 Grants Well	
DATE/TIME	4-19-79 00915	4-19-79 @ 1000	
Compounds on NRDC List of Priority Pollutants	Estimated Concen- tration (ug/l)	Estimated Concen- tration (ug/l)	Estimated Concen- tration
2. bis(chloromethyl) ether	NA	NA	NA
1. N-nitrosodimethylamine	NA	NA	
6. 1,2-dichlorobenzene	ND(10)	ND(10)	
5. 1,3-dichlorobenzene	ND(10)	ND(10)	
7. 1,4-dichlorobenzene	ND(10)	ND(10)	
3. bis(2-chloroethyl) ether	ND(10)	ND(10)	
2. hexachloroethane	ND(10)	ND(10)	
2. bis(2-chloroisopropyl) ether	ND(10)	ND(10)	
3. N-nitrosodi-n-propylamine	ND(10)	ND(10)	
9. nitrobenzene	ND(10)	ND(10)	
2. hexachlorobutadiene	ND(10)	ND(10)	
3. 1,2,4-trichlorobenzene	ND(10)	ND(10)	
5. naphthalene	ND(10)	ND(10)	
3. bis(2-chloroethoxy) methane	ND(10)	ND(10)	
4. isophorone	ND(10)	ND(10)	
3. hexachlorocyclopentadiene	ND(10)	ND(10)	
0. 2-chloronaphthalene	ND(10)	ND(10)	
7. acenaphthylene	ND(10)	ND(10)	
1. acenaphthene	ND(10)	ND(10)	
1. dimethyl phthalate	ND(10)	ND(10)	
5. 2,4-dinitrotoluene	ND(10)	ND(10)	
6. 2,6-dinitrotoluene	ND(10)	ND(10)	
0. 4-chlorophenyl phenyl ether	ND(10)	ND(10)	
0. fluorene	ND(10)	ND(10)	
3. diethyl phthalate	ND(10)	ND(10)	
7. 1,2-diphenylhydrazine 2/	ND(10)	ND(10)	
1. N-nitrosodiphenylamine 3/	ND(10)	ND(10)	
9. hexachlorobenzene	ND(10)	ND(10)	
1. 4-bromophenyl phenyl ether	ND(10)	ND(10)	
1. phenanthrene 2/	ND(10)	ND(10)	
8. anthracene 4/	ND(10)	ND(10)	
8. di-n-butyl phthalate	ND(10)	ND(10)	
9. fluoranthene	ND(10)	ND(10)	
4. pyrene	ND(10)	ND(10)	
7. butyl benzyl phthalate	ND(10)	ND(10)	
5. benzidine	NA	NA	
6. bis(2-ethylhexyl) phthalate	ND(10)	ND(10)	
6. chrysene 5/	ND(10)	ND(10)	
2. 1,2-benzanthracene 5/	ND(10)	ND(10)	
8. 3,3'-dichlorobenzidine	ND(10)	ND(10)	
9. di-n-octyl phthalate	ND(10)	ND(10)	
4. 3,4-benzofluoranthene 6/	NA	NA	
5. 11,12-benzofluoranthene 6/	NA	NA	
3. 3,4-benzopyrene	NA	NA	
3. indeno (1,2,3-cd) pyrene	NA	NA	
2. 1,2,5,6-dibenzanthracene	NA	NA	
9. 1,12-benzoperylene	NA	NA	
4. 2-chlorophenol	ND(10)	ND(10)	
7. 2-nitrophenol	ND(10)	ND(10)	
5a. phenol (GC/MS)	ND(10)	ND(10)	
4. 2,4-dimethylphenol	ND(10)	ND(10)	
1. 2,4-dichlorophenol	ND(10)	ND(10)	
1. 2,4,6-trichlorophenol	ND(10)	ND(10)	
2. parachlorometa cresol	ND(10)	ND(10)	
9. 2,4-dinitrophenol	ND(10)	ND(10)	
0. 4,6-dinitro-o-cresol	ND(10)	ND(10)	
4. pentachlorophenol	ND(10)	ND(10)	
8. 4-nitrophenol	ND(10)	ND(10)	

Trace.

ND - None detected at greater than Minimum Detection Limit (number in parenthesis).

NA - Not Analyzed.

1/ - Tentative Identification.

2/ - and/or azobenzene.

3/ - and/or diphenylamine.

4/ - Phenanthrene and/or anthracene.

5/ - Chrysene and/or 1,2-benzanthracene.

6/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

(OVER)

DATA REPORTING SHEET  
EXTRACTABLE ORGANIC ANALYSIS - WATER

EPA, SAD, RGS. 17  
Athens, GA 6/79

PROJECT Larue County Landfill  
Hodgensville, KY

CHEMIST E. W. Loy, Jr. REC'D. 4/20/79 COMPL'D. 7/3/79

SAD NO.	79C 1036	79C 1037	
SOURCE & STATION	WG-2 Grants Well	WD-1 Dyes Well	
DATE/TIME	4-19-79 #0945	4-19-79 # 1030	
Compounds on NRDC List of Priority Pollutants	Estimated Concentration (ug/l)	Estimated Concentration (ug/l)	Estimated Concentration
17. bis(chloromethyl) ether	NA	NA	NA
51. N-nitrosodimethylamine	NA	NA	
25. 1,2-dichlorobenzene	ND(10)	ND(10)	
26. 1,3-dichlorobenzene	ND(10)	ND(10)	
27. 1,4-dichlorobenzene	ND(10)	ND(10)	
18. bis(2-chloroethyl) ether	ND(10)	ND(10)	
12. hexachloroethane	ND(10)	ND(10)	
42. bis(2-chloroisopropyl) ether	ND(10)	ND(10)	
63. N-nitrosodi-n-propylamine	ND(10)	ND(10)	
56. nitrobenzene	ND(10)	ND(10)	
52. hexachlorobutadiene	ND(10)	ND(10)	
8. 1,2,4-trichlorobenzene	ND(10)	ND(10)	
55. naphthalene	ND(10)	ND(10)	
43. bis(2-chloroethoxy) methane	ND(10)	ND(10)	
54. isophorone	ND(10)	ND(10)	
53. hexachlorocyclopentadiene	ND(10)	ND(10)	
20. 2-chloronaphthalene	ND(10)	ND(10)	
77. acenaphthylene	ND(10)	ND(10)	
1. acenaphthene	ND(10)	ND(10)	
71. dimethyl phthalate	ND(10)	ND(10)	
35. 2,4-dinitrotoluene	ND(10)	ND(10)	
36. 2,6-dinitrotoluene	ND(10)	ND(10)	
40. 4-chlorophenyl phenyl ether	ND(10)	ND(10)	
80. fluorene	ND(10)	ND(10)	
70. diethyl phthalate	ND(10)	ND(10)	
37. 1,2-diphenylhydrazine 2/	ND(10)	ND(10)	
62. N-nitrosodiphenylamine 3/	ND(10)	ND(10)	
9. hexachlorobenzene	ND(10)	ND(10)	
41. 4-bromophenyl phenyl ether	ND(10)	ND(10)	
81. phenanthrene 4/	ND(10)	ND(10)	
78. anthracene 4/	ND(10)	ND(10)	
68. di-n-butyl phthalate	ND(10)	ND(10)	
39. fluoranthene	ND(10)	ND(10)	
84. pyrene	ND(10)	ND(10)	
67. butyl benzyl phthalate	ND(10)	ND(10)	
5. benzidine	NA	NA	
56. bis(2-ethylhexyl) phthalate	ND(10)	ND(10)	
76. chrysene 5/	ND(10)	ND(10)	
72. 1,2-benzanthracene 5/	ND(10)	ND(10)	
28. 3,3'-dichlorobenzidine	ND(10)	ND(10)	
69. di-n-octyl phthalate	ND(10)	ND(10)	
74. 3,4-benzofluoranthene 6/			
75. 11,12-benzofluoranthene 6/	NA	NA	
73. 3,4-benzopyrene	NA	NA	
83. indeno (1,2,3-cd) pyrene	NA	NA	
82. 1,2,5,6-dibenzanthracene	NA	NA	
79. 1,12-benzoperylene	NA	NA	
24. 2-chlorophenol	ND(10)	ND(10)	
57. 2-nitrophenol	ND(10)	ND(10)	
65a. phenol (GC/MS)	ND(10)	ND(10)	
34. 2,4-dimethylphenol	ND(10)	ND(10)	
31. 2,4-dichlorophenol	ND(10)	ND(10)	
21. 2,4,6-trichlorophenol	ND(10)	ND(10)	
22. parachlorometa cresol	ND(10)	ND(10)	
59. 2,4-dinitrophenol	ND(10)	ND(10)	
60. 4,6-dinitro-o-cresol	ND(10)	ND(10)	
64. pentachlorophenol	ND(10)	ND(10)	
53. 4-nitrophenol	ND(10)	ND(10)	

T - Trace.

ND - None detected at greater than Minimum Detection Limit (number in parenthesis).

NA - Not Analyzed.

1/ - Tentative Identification.

2/ - and/or azobenzene.

3/ - and/or diphenylamine.

4/ - Phenanthrene and/or anthracene.

5/ - Chrysene and/or 1,2-benzanthracene.

6/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

(OVER)



EPA-SAD-RCN. IV  
Athens, GA 6/79

1500

T - Trace.  
ND - None detected at greater than Minimum Detection Limit, (number in parenthesis).  
1/ - Tentative Identification.  
2/ - On NRDC List of Priority Pollutants.  
NA - Not analyzed.

INVESTIGATION OF GROUNDWATER CONTAMINATION  
LARUE COUNTY LANDFILL-HODGENSVILLE, KY  
APRIL 16-18, 1979

INTRODUCTION

In response to a request from Senator Huddleston's office requesting Region IV's assistance in answering a citizen's complaint from Mrs. Chester Dye that the Larue County Landfill was contaminating her well, personnel from the Surveillance and Analysis Division conducted a sampling inspection of suspect wells in the area of the landfill during the week of April 16, 1979.

This is the second investigation of the landfill and adjacent wells during the past year. An earlier study was conducted on August 16, 1978 at which time samples were collected from the Grant and Raines wells, and from a landfill leachate stream where it discharged under Highway 84. Analyses of the leachate sample did not reveal any toxic metals or organic compounds. The samples from the Grant and Raines wells did not contain any toxic metals or organic compounds. One compound, butoxy propanol was detected in the Grant well at 23 µg/l. Based on the hydrogeological and water chemistry data from the Grant's well, the water quality was judged to be marginal at best for a potable water supply. It was recommended that the safety of the water was questionable and the well should not be used for consumptive purposes.

SUMMARY

April 1979 Investigation of Grant Residence

In the 1978 report, it was indicated that there was a distinct possibility of contamination from the landfill and septic tank entering the Grant well. In order to exhaust all possible routes of transport to the suspect wells, further testing was conducted during the week of April 16, 1979. An attempt was made to trace possible connection of septic tank wastes from the Grant residence to the Grant well. The effort failed to show a positive path. However, the results were still not conclusive because Rhodamine B dye which was used as the tracer has a major disadvantage in that it is highly sorptive on soils and suspended solids. Since it was injected into a septic tank which contained solids and would have to travel through approximately 200 feet of soil in order to reach the well, it was probably absorbed. The reason the more favorable tracer, Rhodamine WT, which is unaffected by the above mentioned problems was not used was because of the lack of toxicity data for the dye and from recommendations from EPA Headquarters not to use the dye near water supplies.

In light of the probable failure of the tracer study, fecal coliform samples were collected from the currently used Grant Well (WG-1) and from an abandoned well (WG-2) located approximately 120 feet from and upgradient from the well presently in use (WG-1). Based on a single



sample from each well, the currently used well (WG-1) contained a density of 42 colonies per 100 ml, while the abandoned well (WG-2) contained a density of less than two colonies per 100 ml. Both wells are shallow hand dug wells which are open to the environment. It is quite possible that the fecal contamination could have come from mammals or groundwater contaminated with fecal material. Since the currently used Grant well (WG-1) is downgradient from the Grants' septic tank field and the abandoned well is upgradient from the septic tank and both are approximately of the same depth, it becomes very likely that the differences in fecal coliform densities were related to the drainage from the septic tank.

Metal analysis performed on both well samples did not indicate any concentrations of metals out of the ordinary. For all practical purposes, the water in both wells (WG-1, WG-2) are identical in respect to metal concentrations.

Volatile organic analyses have been completed but no organic compounds were detected in either well (WG-1 or WG-2). Extractable organics data will be forwarded upon completion of analyses.

#### Roy Raines Residence

Roy Raines well (WR-1) is a cased well 47 feet deep. The well is located across Highway 84 from the landfill and is the only deep well in the area. There were no unusually high concentrations of metals found or any volatile organic compounds detected. However, there were three fecal coliform colonies per 100 ml present in the single sample collected from the well.

#### Chester Dye Residence

The Chester Dye well (WD-1) is a hand dug well with a shed built over the well. The metal concentrations were nearly identical to those found in the other three wells with the exception of zinc, which was detected at a slightly higher concentration, 129  $\mu\text{g/l}$ . No volatile organic compounds were detected. A high density of fecal coliform was detected in the single sample (22 colonies per 100 ml).

#### Larue County Landfill Leachate Stream

The leachate stream had the usual reddish-brown appearance of leachate from dumps and did contain a higher concentration of iron than did the well samples. No other metal concentrations of concern were detected. The only volatile organic compound detected was toluene which was found at concentrations of 6  $\mu\text{g/l}$ .

The field sheets and analytical data are attached to the back of this report.

## CONCLUSIONS

Based on the two investigations (August 1978 and April 1979) conducted in the area of the Larue County Landfill, it does not appear that the groundwater is contaminated by the leachate from the landfill. All three wells serving the residents (Grant, Dye and Raines residences) are possibly being contaminated by fecal coliform from septic tank drainage, animal wastes or contaminated surface water. According to the residents, the well water was "good spring water" before the installation of the landfill. For some unknown reason, the water is no longer of sufficient quality to be used for potable water. Since there are no historical data to compare previous water quality with existing conditions nor no evidence of contamination from the landfill, no reason for the supposed degradation in water quality can be given.

## RECOMMENDATIONS

It is recommended that the Larue County Health Department run additional fecal coliform tests on the suspect wells to determine if they are indeed as contaminated as the earlier tests show. The Roy Raines well appears to be the only well of the three residential water supplies that may be salvaged as a potable source if it is not being contaminated from septic tank wastes.

## METHODOLOGY

All samples were collected by the grab technique using standard containers. The Grant's two wells and the Dye's well were sampled directly from the wells, while the Raines' well was collected from a hand pump in the yard which was pumped approximately five minutes before sampling.

All chemical samples were stored on ice and transported to the Region IV laboratory in Athens, GA for analysis. The bacteriological samples were transported to the Jefferson County Health Department Laboratory in Louisville who did the testing. These samples could not be conducted in the Athens laboratory because of the holding time constraints on the test.

# DATA REPORTING SHEET - WATER

PROJECT Larue County

CHEMIST McDaniel

REC'D 4/20/79 COMPL'D 5/14/79

AD No.	L-1	WR-1	WG-1	WG-2
SOURCE & STATION	Leachate 79C1033	Raines Well 79C1034	Grants Well 79C1035	Grants Old Well 79C1036
DATE/TIME				
ELEMENT (UG/L)				
Silver	<10	<10	<10	<10
Arsenic	<25	<25	<25	<25
Boron	-	-	-	-
Barium	100	11	18	17
Beryllium	<10	<10	<10	<10
Cadmium	<10	<10	<10	<10
Cobalt	<20	<20	<20	<20
Chromium	<10	<10	<10	<10
Copper	<10	<10	<10	<10
Molybdenum	-	<20	<20	<20
Nickel	<20	<20	<20	<20
Lead	<25	<25	<25	<25
Antimony	<25	<25	<25	<25
Selenium	<40	<40	<40	<40
Tin	<50	<50	<50	<50
Strontium	245	475	42	60
Tellurium	<40	<40	<40	<40
Titanium	<10	<10	<10	27
Thallium	<100	<100	<100	<100
Vanadium	<10	<10	<10	<10
Yttrium	<10	<10	<10	<10
Zinc	13	50	<10	60
Zirconium	<10	<10	<10	<10
ELEMENT (MG/L)				
Silica	-	-	-	-
Calcium	58	60	39	26
Magnesium	15	16	3.7	2.9
Aluminum	0.1	0.1	0.2	2.4
Iron	19	0.1	0.2	2.5
Manganese	2.8	<0.05	<0.05	<0.05
Sodium	41	8	5	2

# DATA R RING SHEET - WATER

PROJECT Larue County CHEMIST McDaniel REC'D 4-20-79 COMPL'D 5/14/79

AD No.	79C1037			
SOURCE & STATION	WD-1 Dyes Well			
DATE/TIME				
ELEMENT (UG/L)				
Silver	<10			
Arsenic	<25			
Boron	-			
Barium	28			
Beryllium	<10			
Cadmium	<10			
Cobalt	<20			
Chromium	<10			
Copper	<10			
Molybdenum	<20			
Nickel	<20			
Lead	<25			
Antimony	<25			
Selenium	<40			
Tin	<50			
Strontium	145			
Tellurium	<40			
Titanium	47			
Thallium	<100			
Vanadium	<10			
Yttrium	<10			
Zinc	129			
Zirconium	<10			
ELEMENT (MG/L)				
Silica				
Calcium	22			
Magnesium	1.8			
Aluminum	3.3			
Iron	3.1			
Manganese	0.05			
Sodium	2			



SAB No.	79C1033	79C1034	
SOURCE & STATION	L-1, Leachate Stream	WR-1, Raines Well	
DATE/TIME	4-19-79, 0930	4-19-79, 0915	
COMPOUND	Units, ug/l		
Chloromethane	ND(1)	ND(1)	
Bromomethane	ND(1)	ND(1)	
Vinyl Chloride	ND(1)	ND(1)	
Chloroethane	ND(1)	ND(1)	
Methylene Chloride	ND(1)	ND(1)	
Trichlorofluoromethane	ND(1)	ND(1)	
1,1-Dichloroethylene	ND(1)	ND(1)	
1,1-Dichloroethane	ND(1)	ND(1)	
Trans-1,2-Dichloroethene	ND(1)	ND(1)	
Chloroform	ND(1)	ND(1)	
1,2-Dichloroethane	ND(1)	ND(1)	
1,1,1-Trichloroethane	ND(1)	ND(1)	
Carbontetrachloride	ND(1)	ND(1)	
Bromodichloromethane	ND(1)	ND(1)	
1,2-Dichloropropane	ND(1)	ND(1)	
Trans-1,3-Dichloropropene	ND(1)	ND(1)	
Trichloroethylene	ND(1)	ND(1)	
Benzene	ND(1)	ND(1)	
Cis-1,3-Dichloropropene	ND(1)	ND(1)	
1,1,2-Trichloroethane	ND(1)	ND(1)	
Dibromochloromethane	ND(1)	ND(1)	
Bromoform	ND(1)	ND(1)	
Tetrachloroethylene	ND(1)	ND(1)	
1,1,2,2,-Tetrachloroethane	ND(1)	ND(1)	
Toluene	6	ND(1)	
Chlorobenzene	ND(1)	ND(1)	
Ethyl Benzene	ND(1)	ND(1)	
Acrolein	ND(10)	ND(10)	
Acrylonitrile	ND(10)	ND(10)	

ND - None detected; number in parenthesis is minimum detection limit.



SAD No.	79C1035	79C1036	79C1037
SOURCE & STATION	WG-1, Grant's Well	WG-2, Grant's Well	WD-1 Dye's Well
DATE/TIME	4-19-79 1000	4-19-79 0945	4-19-79 1030
COMPOUND Units, ug/l			
Chloromethane	ND(1)	ND(1)	ND(1)
Bromomethane	ND(1)	ND(1)	ND(1)
Vinyl Chloride	ND(1)	ND(1)	ND(1)
Chloroethane	ND(1)	ND(1)	ND(1)
Methylene Chloride	ND(1)	ND(1)	ND(1)
Trichlorofluoromethane	ND(1)	ND(1)	ND(1)
1,1-Dichloroethylene	ND(1)	ND(1)	ND(1)
1,1-Dichloroethane	ND(1)	ND(1)	ND(1)
Trans-1,2-Dichloroethene	ND(1)	ND(1)	ND(1)
Chloroform	ND(1)	ND(1)	ND(1)
1,2-Dichloroethane	ND(1)	ND(1)	ND(1)
1,1,1-Trichloroethane	ND(1)	ND(1)	ND(1)
Carbontetrachloride	ND(1)	ND(1)	ND(1)
Bromodichloromethane	ND(1)	ND(1)	ND(1)
1,2-Dichloropropane	ND(1)	ND(1)	ND(1)
Trans-1,3-Dichloropropene	ND(1)	ND(1)	ND(1)
Trichloroethylene	ND(1)	ND(1)	ND(1)
Benzene	ND(1)	ND(1)	ND(1)
Cis-1,3-Dichloropropene	ND(1)	ND(1)	ND(1)
1,1,2-Trichloroethane	ND(1)	ND(1)	ND(1)
Dibromochloromethane	ND(1)	ND(1)	ND(1)
Bromoform	ND(1)	ND(1)	ND(1)
Tetrachloroethylene	ND(1)	ND(1)	ND(1)
1,1,2,2,-Tetrachloroethane	ND(1)	ND(1)	ND(1)
Toluene	ND(1)	ND(1)	ND(1)
Chlorobenzene	ND(1)	ND(1)	ND(1)
Ethyl Benzene	ND(1)	ND(1)	ND(1)
Acrolein	ND(10)	ND(10)	ND(10)
Acrylonitrile	ND(10)	ND(10)	ND(10)

ND - None detected; number in parenthesis is minimum detection limit.

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
SURVEILLANCE AND ANALYSIS DIVISION**

REGION IV

ATHENS, GEORGIA

DISCHARGER <u>Chester Dye</u>	SAMPLING STATION NO. <u>WD-1</u>
ADDRESS <u>RT. 3 Hodgeville</u>	SAMPLING LOCATION <u>Dye well</u>
CONTACT _____	_____

**SAMPLE AND WASTE FLOW INFORMATION**

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.

SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_

FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP. \_\_\_\_\_

COMPUTED FROM \_\_\_\_\_

**SAMPLE COLLECTION**

SAD NO.	COMPOSITE	GRAB SAMPLES	SAMPLE CODE 12
DATE	<u>1</u>	<u>79-10-37</u>	BACTERIAL 0
TIME	<u>1</u>	<u>4/19/79</u>	BOD, COD, TOC 1
FLOW ( ) LL		<u>1030</u>	CYANIDE 2
TEMPERATURE °C			METALS 3
pH			N, P 4
TOT. Cl <sub>2</sub> RES, mg/l			ORG, OBG, PEST 5
			PHENOLS 6
			SOLIDS 7
			8
SAMPLE CODE		<u>Org. via meth</u>	9
SAMPLED BY (Sig)		<u>W.F. L. L. L.</u>	A
SEALED BY (Sig)		<u>J.D. Kipton</u>	B
DATE AND TIME			PRESERVED P

11 Use Avg. Flow for Composites and Inst. Flow for Grabs 12 Circle or Indicate Analysis and Enter Numerical Code

**SAMPLE CUSTODY AND SHIPPING INFORMATION**

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
<u>Alan Jones</u>	<u>4-20-79</u>	<u>1300</u>			

**REMARKS AND SKETCHES**

BACT sent to Louisville

# U.S. ENVIRONMENTAL PROTECTION AGENCY SURVEILLANCE AND ANALYSIS DIVISION

REGION IV

ATHENS, GEORGIA

DISCHARGER <u>GRANTS Well</u> ADDRESS _____ CONTACT _____	SAMPLING STATION NO. <u>WG-1</u> SAMPLING LOCATION <u>GRANTS Well</u>
---	--

## SAMPLE AND WASTE FLOW INFORMATION

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.  
 SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_  
 FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP. \_\_\_\_\_  
 COMPUTED FROM \_\_\_\_\_

## SAMPLE COLLECTION

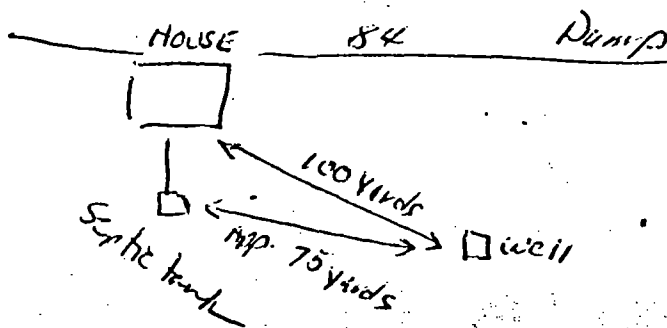
SAD NO.	COMPOSITE	GRAB SAMPLES	SAMPLE CODE 12
DATE	/	7/4-1035	BACTERIAL 0
TIME	/	4/19/74	BOD, COD, TOC 1
FLOW ( ) L		1000	CYANIDE 2
TEMPERATURE °C			METALS 3
pH			N, P 4
TOT. Cl <sub>2</sub> RES, mg/l			ORG, O&G, PEST 5
			PHENOLS 6
			SOLIDS 7
			8
SAMPLE CODE		Org. 1/4, Net	9
SAMPLED BY (Sig)		W. P. Smith	A
SEALED BY (Sig)		J. D. K. Smith	B
DATE AND TIME			PRESERVED P

1 Use Avg. Flow for Composites and Inst. Flow for Grabs      12 Circle or Indicate Analysis and Enter Numerical Code

## SAMPLE CUSTODY AND SHIPPING INFORMATION

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
<u>Star Jones</u>	<u>4-20-74</u>	<u>1500</u>	<u>3</u>		

## REMARKS AND SKETCHES



Bact sent to Jeff. Co.  
Health Dept.

# U.S. ENVIRONMENTAL PROTECTION AGENCY SURVEILLANCE AND ANALYSIS DIVISION

REGION IV

ATHENS, GEORGIA

DISCHARGER <u>Lewis County Landfill</u> ADDRESS <u>Kentucky</u> CONTACT _____	SAMPLING STATION NO. <u>L-1</u> SAMPLING LOCATION <u>Leachate stream</u>
---	---

## SAMPLE AND WASTE FLOW INFORMATION

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.  
 SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_  
 FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP. \_\_\_\_\_  
 COMPUTED FROM \_\_\_\_\_

## SAMPLE COLLECTION

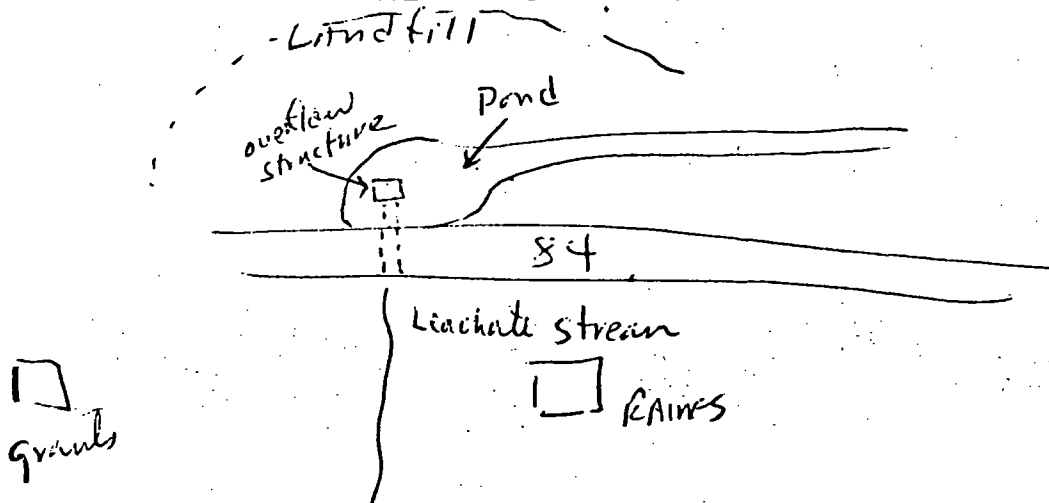
SAD NO.	COMPOSITE	79-1033	GRAB SAMPLES	SAMPLE CODE 12	
DATE	/	4/14/79		BACTERIAL	0
TIME	/	09:30		POD, COD, TOC	1
FLOW ( ) LL				CYANIDE	2
TEMPERATURE °C				METALS	3
pH				N, P	4
TOT. Cl <sub>2</sub> RES. mg/l				ORG, O&G, PEST	5
				PHENOLS	6
				SOLIDS	7
					8
SAMPLE CODE		503 MET. VAN			9
SAMPLED BY (Sig)		W. B. RILEY			A
SEALED BY (Sig)					B
DATE AND TIME				PRESERVED	P

11 Use Ave. Flow for Composites and Inst. Flow for Grabs      12 Circle or Indicate Analysis and Enter Numerical Code

## SAMPLE CUSTODY AND SHIPPING INFORMATION

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
<u>Star Service</u>	<u>4-28-79</u>	<u>1500</u>	<u>33</u>		

## REMARKS AND SKETCHES



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ATHENS, GEORGIA 30605

DATE: JUN 22 1979

SUBJECT: Larue County Landfill and Water Supply Investigation,  
Hodgensville, KY, April 1979

FROM: Water Surveillance Branch

TO: Addressees

SUMMARY

Enclosed is the report and analytical data for the study of the leachate from the Larue County Landfill and samples from private wells in the immediate area of the landfill. No volatile organics were detected in the well samples. Toluene was detected in the leachate sample at a concentration of 6 µg/l. No metals were detected at concentrations of concern. However, all wells sampled did contain fecal coliform colonies. The Grant and Dye wells had densities of 44 and 22 colonies per 100 ml, respectively.

ACTION

For your information.

BACKGROUND

Memo from Asa B. Foster, Jr., to Jim Finger requesting Surveillance and Analysis investigation dated March 12, 1979. )

*W. R. Davis*

W. R. Davis

Enclosure

Addressees:

Enforcement Division

Harvey

Turnipseed/Allen

S&A Division

Finger/Adams

Carter/Lair

Bennett/Carroll

Water Division

Traina

Hutchinson/McClanahan

Air & Hazardous Materials Division

Scarborough/Dickinson

OEA

Bob Humphries

INVESTIGATION OF GROUNDWATER CONTAMINATION  
LARUE COUNTY LANDFILL-HODGENSVILLE, KY  
APRIL 16-18, 1979

INTRODUCTION

In response to a request from Senator Huddleston's office requesting Region IV's assistance in answering a citizen's complaint from Mrs. Chester Dye that the Larue County Landfill was contaminating her well, personnel from the Surveillance and Analysis Division conducted a sampling inspection of suspect wells in the area of the landfill during the week of April 16, 1979.

This is the second investigation of the landfill and adjacent wells during the past year. An earlier study was conducted on August 16, 1978 at which time samples were collected from the Grant and Raines wells, and from a landfill leachate stream where it discharged under Highway 84. Analyses of the leachate sample did not reveal any toxic metals or organic compounds. The samples from the Grant and Raines wells did not contain any toxic metals or organic compounds. One compound, butoxy propanol was detected in the Grant well at 23 µg/l. Based on the hydrogeological and water chemistry data from the Grant's well, the water quality was judged to be marginal at best for a potable water supply. It was recommended that the safety of the water was questionable and the well should not be used for consumptive purposes.

SUMMARY

April 1979 Investigation of Grant Residence

In the 1978 report, it was indicated that there was a distinct possibility of contamination from the landfill and septic tank entering the Grant well. In order to exhaust all possible routes of transport to the suspect wells, further testing was conducted during the week of April 16, 1979. An attempt was made to trace possible connection of septic tank wastes from the Grant residence to the Grant well. The effort failed to show a positive path. However, the results were still not conclusive because Rhodamine B dye which was used as the tracer has a major disadvantage in that it is highly sorptive on soils and suspended solids. Since it was injected into a septic tank which contained solids and would have to travel through approximately 200 feet of soil in order to reach the well, it was probably absorbed. The reason the more favorable tracer, Rhodamine WT, which is unaffected by the above mentioned problems was not used was because of the lack of toxicity data for the dye and from recommendations from EPA Headquarters not to use the dye near water supplies.

In light of the probable failure of the tracer study, fecal coliform samples were collected from the currently used Grant Well (WG-1) and from an abandoned well (WG-2) located approximately 120 feet from and upgradient from the well presently in use (WG-1). Based on a single

sample from each well, the currently used well (WG-1) contained a density of 42 colonies per 100 ml, while the abandoned well (WG-2) contained a density of less than two colonies per 100 ml. Both wells are shallow hand dug wells which are open to the environment. It is quite possible that the fecal contamination could have come from mammals or groundwater contaminated with fecal material. Since the currently used Grant well (WG-1) is downgradient from the Grants' septic tank field and the abandoned well is upgradient from the septic tank and both are approximately of the same depth, it becomes very likely that the differences in fecal coliform densities were related to the drainage from the septic tank.

Metal analysis performed on both well samples did not indicate any concentrations of metals out of the ordinary. For all practical purposes, the water in both wells (WG-1, WG-2) are identical in respect to metal concentrations.

Volatile organic analyses have been completed but no organic compounds were detected in either well (WG-1 or WG-2). Extractable organics data will be forwarded upon completion of analyses.

#### Roy Raines Residence

Roy Raines well (WR-1) is a cased well 47 feet deep. The well is located across Highway 84 from the landfill and is the only deep well in the area. There were no unusually high concentrations of metals found or any volatile organic compounds detected. However, there were three fecal coliform colonies per 100 ml present in the single sample collected from the well.

#### Chester Dye Residence

The Chester Dye well (WD-1) is a hand dug well with a shed built over the well. The metal concentrations were nearly identical to those found in the other three wells with the exception of zinc, which was detected at a slightly higher concentration, 129 µg/l. No volatile organic compounds were detected. A high density of fecal coliform was detected in the single sample (22 colonies per 100 ml).

#### Larue County Landfill Leachate Stream

The leachate stream had the usual reddish-brown appearance of leachate from dumps and did contain a higher concentration of iron than did the well samples. No other metal concentrations of concern were detected. The only volatile organic compound detected was toluene which was found at concentrations of 6 µg/l.

The field sheets and analytical data are attached to the back of this report.

## CONCLUSIONS

Based on the two investigations (August 1978 and April 1979) conducted in the area of the Larue County Landfill, it does not appear that the groundwater is contaminated by the leachate from the landfill. All three wells serving the residents (Grant, Dye and Raines residences) are possibly being contaminated by fecal coliform from septic tank drainage, animal wastes or contaminated surface water. According to the residents, the well water was "good spring water" before the installation of the landfill. For some unknown reason, the water is no longer of sufficient quality to be used for potable water. Since there are no historical data to compare previous water quality with existing conditions nor no evidence of contamination from the landfill, no reason for the supposed degradation in water quality can be given.

## RECOMMENDATIONS

It is recommended that the Larue County Health Department run additional fecal coliform tests on the suspect wells to determine if they are indeed as contaminated as the earlier tests show. The Roy Raines well appears to be the only well of the three residential water supplies that may be salvaged as a potable source if it is not being contaminated from septic tank wastes.

*determine  
Ratio fecal to  
Streptococci*

## METHODOLOGY

All samples were collected by the grab technique using standard containers. The Grant's two wells and the Dye's well were sampled directly from the wells, while the Raines' well was collected from a hand pump in the yard which was pumped approximately five minutes before sampling.

All chemical samples were stored on ice and transported to the Region IV laboratory in Athens, GA for analysis. The bacteriological samples were transported to the Jefferson County Health Department Laboratory in Louisville who did the testing. These samples could not be conducted in the Athens laboratory because of the holding time constraints on the test.



SAD No.	L-1	WR-1	WG-1	WG-2
SOURCE & STATION	Leachate 79C1033	Raines Well 79C1034	Grants Well 79C1035	Grants Old Well 79C1036
DATE/TIME				
ELEMENT (ug/L)				
Silver	<10	<10	<10	<10
Arsenic	<25	<25	<25	<25
Boron	-	-	-	-
Barium	100	11	18	17
Beryllium	<10	<10	<10	<10
Cadmium	<10	<10	<10	<10
Cobalt	<20	<20	<20	<20
Chromium	<10	<10	<10	<10
Copper	<10	<10	<10	<10
Molybdenum	-	<20	<20	<20
Nickel	<20	<20	<20	<20
Lead	<25	<25	<25	<25
Antimony	<25	<25	<25	<25
Selenium	<40	<40	<40	<40
Tin	<50	<50	<50	<50
Strontium	245	475	42	60
Tellurium	<40	<40	<40	<40
Titanium	<10	<10	<10	27
Thallium	<100	<100	<100	<100
Tantalum	<10	<10	<10	<10
Uranium	<10	<10	<10	<10
Zinc	13	50	<10	60
Zirconium	<10	<10	<10	<10
ELEMENT (ug/L)				
Aluminum	-	-	-	-
Barium	58	60	39	26
Bismuth	15	16	3.7	2.9
Cadmium	0.1	0.1	0.2	2.4
Copper	19	0.1	0.2	2.5
Lead	2.8	<0.05	<0.05	<0.05
Mercury	41	8	5	2

PROJECT Larue County CHEMIST McDaniel REC'D 4-20-79 COMPL'D 5/14/79

SAD No.	79C1037			
SOURCE & STATION	WD-1 Dyes Well			
DATE/TIME				
ELEMENT (UG/L)				
Silver	<10			
Arsenic	<25			
Boron	-			
Barium	28			
Beryllium	<10			
Cadmium	<10			
Cobalt	<20			
Chromium	<10			
Copper	<10			
Molybdenum	<20			
Nickel	<20			
Lead	<25			
Antimony	<25			
Selenium	<40			
Vanadium	<50			
Strontium	145			
Thallium	<40			
Titanium	47			
Uranium	<100			
Zinc	<10			
Barium	<10			
Mercury	129			
Iron	<10			
ELEMENT (MG/L)				
Calcium	22			
Magnesium	1.8			
Aluminum	3.3			
Sodium	3.1			
Potassium	0.05			
Fluoride	2			

ND No.	79C1033	79C1034	
SOURCE & STATION	L-1, Leachate Stream	WR-1, Raines Well	
DATE/TIME	4-19-79, 0930	4-19-79, 0915	
COMPOUND Units, ug/l			
Chloromethane	ND(1)	ND(1)	
Bromomethane	ND(1)	ND(1)	
Vinyl Chloride	ND(1)	ND(1)	
Chloroethane	ND(1)	ND(1)	
Methylene Chloride	ND(1)	ND(1)	
Trichlorofluoromethane	ND(1)	ND(1)	
1,1-Dichloroethylene	ND(1)	ND(1)	
1,1-Dichloroethane	ND(1)	ND(1)	
Trans-1,2-Dichloroethene	ND(1)	ND(1)	
Chloroform	ND(1)	ND(1)	
1,2-Dichloroethane	ND(1)	ND(1)	
1,1,1-Trichloroethane	ND(1)	ND(1)	
Carbontetrachloride	ND(1)	ND(1)	
Bromodichloromethane	ND(1)	ND(1)	
1,2-Dichloropropane	ND(1)	ND(1)	
Trans-1,3-Dichloropropene	ND(1)	ND(1)	
Trichloroethylene	ND(1)	ND(1)	
Benzene	ND(1)	ND(1)	
Cis-1,3-Dichloropropene	ND(1)	ND(1)	
1,1,2-Trichloroethane	ND(1)	ND(1)	
Dibromochloromethane	ND(1)	ND(1)	
Bromoform	ND(1)	ND(1)	
Tetrachloroethylene	ND(1)	ND(1)	
1,1,2,2,-Tetrachloroethane	ND(1)	ND(1)	
Toluene	6	ND(1)	
Chlorobenzene	ND(1)	ND(1)	
Ethyl Benzene	ND(1)	ND(1)	
Acrolein	ND(10)	ND(10)	
Acrylonitrile	ND(10)	ND(10)	

ND - None detected; number in parenthesis is minimum detection limit.

CHEMIST McDaniel

REC'D 4-20-79

COMPL'D 5/14/79

	79C1037		
	WD-1 Dyes Well		
	<10		
	<25		
	-		
	28		
	<10		
	<10		
	<20		
	<10		
	<10		
	<20		
	<20		
	<25		
	<25		
	<40		
	<50		
	145		
	<40		
	47		
	<100		
	<10		
	<10		
	129		
	<10		
	22		
	1.8		
	3.3		
	3.1		
	0.05		
	2		

No.	79C1035	79C1036	79C1037
SOURCE & STATION	WG-1, Grant's Well	WG-2, Grant's Well	WD-1 Dye's Well
DATE/TIME	4-19-79 1000	4-19-79, 0945	4-19-79, 1030
GROUND Units, ug/l			
Chloromethane	ND(1)	ND(1)	ND(1)
Bromomethane	ND(1)	ND(1)	ND(1)
Vinyl Chloride	ND(1)	ND(1)	ND(1)
Chloroethane	ND(1)	ND(1)	ND(1)
Methylene Chloride	ND(1)	ND(1)	ND(1)
Trichlorofluoromethane	ND(1)	ND(1)	ND(1)
1,1-Dichloroethylene	ND(1)	ND(1)	ND(1)
1,1-Dichloroethane	ND(1)	ND(1)	ND(1)
Trans-1,2-Dichloroethene	ND(1)	ND(1)	ND(1)
Chloroform	ND(1)	ND(1)	ND(1)
1,2-Dichloroethane	ND(1)	ND(1)	ND(1)
1,1,1-Trichloroethane	ND(1)	ND(1)	ND(1)
Carbontetrachloride	ND(1)	ND(1)	ND(1)
Bromodichloromethane	ND(1)	ND(1)	ND(1)
1,2-Dichloropropane	ND(1)	ND(1)	ND(1)
Trans-1,3-Dichloropropene	ND(1)	ND(1)	ND(1)
Trichloroethylene	ND(1)	ND(1)	ND(1)
Benzene	ND(1)	ND(1)	ND(1)
Cis-1,3-Dichloropropene	ND(1)	ND(1)	ND(1)
1,1,2-Trichloroethane	ND(1)	ND(1)	ND(1)
Dibromochloromethane	ND(1)	ND(1)	ND(1)
Bromoform	ND(1)	ND(1)	ND(1)
Tetrachloroethylene	ND(1)	ND(1)	ND(1)
1,1,2,2,-Tetrachloroethane	ND(1)	ND(1)	ND(1)
Toluene	ND(1)	ND(1)	ND(1)
Chlorobenzene	ND(1)	ND(1)	ND(1)
Ethyl Benzene	ND(1)	ND(1)	ND(1)
Acrolein	ND(10)	ND(10)	ND(10)
Acrylonitrile	ND(10)	ND(10)	ND(10)

ND - None detected; number in parenthesis is minimum detection limit.

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
SURVEILLANCE AND ANALYSIS DIVISION**

REGION IV

ATHENS, GEORGIA

DISCHARGER <u>Chester Dye</u>	SAMPLING STATION NO. <u>WD-1</u>
ADDRESS <u>RT. 3 Hodgeville</u>	SAMPLING LOCATION <u>Dyes well</u>
CONTACT _____	_____

**SAMPLE AND WASTE FLOW INFORMATION**

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.

SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_

FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP. \_\_\_\_\_

COMPUTED FROM \_\_\_\_\_

**SAMPLE COLLECTION**

SAD NO.	COMPOSITE	796-1037	GRAB SAMPLES	SAMPLE CODE 12	Q
DATE	1	4/19/79		BACTERIAL	0
TIME	1	1030		ROD. CO2 TOC	1
FLOW ( ) IL				CYANIDE	2
TEMPERATURE °C				METALS	3
pH				N, P	4
TOT. Cl2 RES. mg/l				ORG. O&G. PEST	5
				PHENOLS	6
				SOLIDS	7
					8
SAMPLE CODE		Org. via met			9
SAMPLED BY (Sig)		W.F. Labin	J.D. Kipstein		A
SEALED BY (Sig)					B
DATE AND TIME				PRESERVED	P

11 Use Avg. Flow for Composites and Inst. Flow for Grabs      12 Circle or Indicate Analysis and Enter Numerical Code

**SAMPLE CUSTODY AND SHIPPING INFORMATION**

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
<u>Alan Jowers</u>	<u>4-20-79</u>	<u>1500</u>			

**REMARKS AND SKETCHES**

*BACT sent to Louisville*

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
SURVEILLANCE AND ANALYSIS DIVISION**

REGION IV

ATHENS, GEORGIA

DISCHARGER <u>GRANTS Well</u>	SAMPLING STATION NO. <u>WG-1</u>
ADDRESS _____	SAMPLING LOCATION <u>GRANTS Well</u>
CONTACT _____	_____

**SAMPLE AND WASTE FLOW INFORMATION**

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.

SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_

FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP \_\_\_\_\_

COMPUTED FROM \_\_\_\_\_

**SAMPLE COLLECTION**

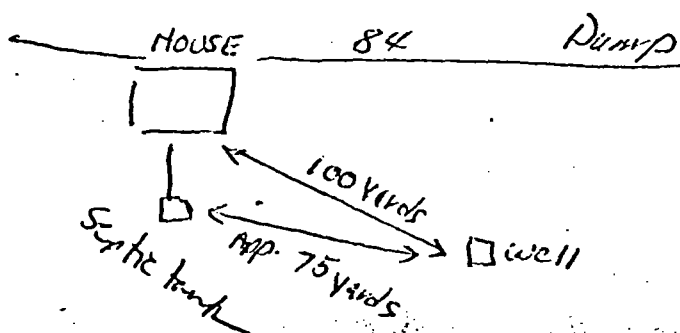
COMPOSITE		GRAB SAMPLES		SAMPLE CODE 12	
SAD NO.		796-1035			BACTERIAL 0
DATE	1	4/19/79			BOD, COD, TOC 1
TIME	1	1000			CYANIDE 2
FLOW ( ) U					METALS 3
TEMPERATURE °C					N, P 4
H					ORG, OBG, PEST 5
TOT. Cl <sub>2</sub> RES. mg/l					PHENOLS 6
					SOLIDS 7
					8
SAMPLE CODE		Org, Inst, Met			9
SAMPLED BY (Sig)		W. B. Tull	J. D. K. [unclear]		A
SEALED BY (Sig)					B
DATE AND TIME					PRESERVED P

Use Avg. Flow for Composites and Inst. Flow for Grabs 12 Circle or Indicate Analysis and Enter Numerical Code

**SAMPLE CUSTODY AND SHIPPING INFORMATION**

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
<u>State Forestry</u>	<u>4-20-79</u>	<u>1500</u>	<u>3</u>		

**REMARKS AND SKETCHES**



*Bact sent to Jeff. Co.  
Health Dept.*



## REGION IV

DISCHARGER Lake County Landfill  
ADDRESS Kentucky

SAMPLING STATION NO. L-1  
SAMPLING LOCATION Leachate stream

## CONTACT

SAMPLE ☐ MUN. ☐ IND. ☐ INF. ☐ EFF. ☐ \_\_\_\_\_ ☐ \_\_\_\_\_ HR. COMP. AT \_\_\_\_\_ MIN. INTERVALS ☐ FLOW PRO.  
SAMPLER ☐ EPA ☐ DISCHARGER ☐ MAN. ☐ AUTO. ☐ TYPE \_\_\_\_\_  
FLOW ☐ EPA ☐ DISCHARGER ☐ AVG. ☐ INST. ☐ EST. ☐ \_\_\_\_\_ EQUIP \_\_\_\_\_  
COMPUTED FROM \_\_\_\_\_

COMPOSITE		GRAB SAMPLES			SAMPLE CODE 12		
SAD NO.		79-1033				BACTERIAL	0
DATE	/	4/14/79				BOD, COD, TOC	1
TIME	/	0930				CYANIDE	2
FLOW ( ) 11						METALS	3
TEMPERATURE °C						N, P	4
pH						ORG, OBG, PEST	5
TOT. Cl <sub>2</sub> RES, mg/l						PHENOLS	6
						SOLIDS	7
							8
SAMPLE CODE		SDG, INST. V/A					9
SAMPLED BY (Sig)		W. B. Davis					A
SEALED BY (Sig)							B
DATE AND TIME						PRESERVED	P

11 Use Avg. Flow for Composites and Inst. Flow for Grabs

12 Circle or Indicate Analysis and Enter Numerical Code

SAMPLES RELEASED TO (SIG) OR SHIPPED VIA	DATE	TIME	NO. CONT.	NO. CART.	RECEIPT NO.
Star Jewelry	4-20-79	1500	3		

Hand-drawn map of the Leachate stream area. The map shows a 'Leachate stream' flowing from a 'Land fill' area at the top. An 'overflow structure' is located on the left bank, with a 'Pond' situated just downstream. A distance of '84' is marked along the stream. A 'Grants' area is indicated by a square symbol on the left, and a 'RAINES' area is indicated by a square symbol on the right.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: APR 24 1979

SUBJECT: Water Samples Collected from Private Wells in Marion County Kentucky--  
Phillip Winslow and Walter Abel, Sr.

FROM: Water Surveillance Branch

TO: Addressees

SUMMARY

Enclosed are the analytical data for samples collected from the wells at the Phillip Winslow and Walter Abel, Sr. residences in Marion County Kentucky, on March 8, 1979. These wells are located near an abandoned waste site and have been suspected of possible groundwater contamination. No organic compounds were detected at a concentration greater than 5  $\mu$ g/l. No metal concentrations of significance were detected.

ACTION

For your information.

BACKGROUND

Letter from Asa B. Foster Jr., to Jim Finger requesting assistance in collecting and analyzing water from the subject wells, January 19, 1979.

*W. R. Davis*  
W. R. Davis

Enclosures

cc: Keith Brock  
Devine/Scarborough  
Traina/Hutchinson  
McClanahan  
Finger/Adams  
Lair/Carter  
Bennett/Carroll  
Tebo

# DATA REPORTING SHEET - WATER

PROJECT Water Supply  
G. Hutchinson CHEMIST W. H. McDaniel REC'D 3/9/79 COMPL'D 4/12/79

SAD No.	79C 0527	79C 0528		
SOURCE & STATION	WPW-1, Phillip Winslow Well behind House	WWA-1, Walter Abel, Sr. Well House		
DATE/TIME	3/8/79 @ 1140	3/8/79, @ 1300		
ELEMENT (UG/L)				
Silver	<10	<10		
Arsenic	<25	<25		
Boron	-	-		
Barium	38	17		
Beryllium	<10	<10		
Cadmium	<10	<10		
Cobalt	<20	<20		
Chromium	<10	<10		
Copper	<10	<10		
Molybdenum	<20	<20		
Nickel	<20	<20		
Lead	<25	<25		
Antimony	<25	<25		
Selenium	<40	<40		
Tin	<50	<50		
Strontium	87	48		
Tellurium	<50	<50		
Titanium	<20	<20		
Thallium	<100	<100		
Vanadium	<10	<10		
Yttrium	<10	<10		
Zinc	26	20		
Zirconium	<10	<10		
ELEMENT (MG/L)				
Silica	-	-		
Calcium	54	57		
Magnesium	7.5	15		
Aluminum	0.4	0.2		
Iron	0.2	0.2		
Manganese	<0.05	<0.05		
Sodium	3	3		

2/ - On NRDC List of Priority Pollutants

DATE: July 13, 1979

SUBJECT: Abstract, Preliminary Coring Report for the 13.6 Acre Farm Near Louisville, Kentucky

FROM: Hydrogeologist

TO: James Scarbrough, Chief  
Residual Management Branch

THRU: John E. Dickinson

JHS 7/30  
John E. Dickinson

Coring at the "Distler's Parents" 13.6 acre farm has been completed. This effort occurred on 26 - 27 June 1979 and was performed by the Kentucky Department of Transportation, U.S. EPA SAD personnel and myself. Coring and sampling were performed in accordance with the protocol established and promulgated in late January 1979.

The results of the four 20 ft. cores indicated that this area is overlain by about 5 ft. of silty clays. The water table occurred at about 13 ft. representative of dry season conditions. The second core taken showed signs of organic contamination (strong organic solvent odor) in the clays at a depth of 5-8 ft. The sands and ground water did not have this odor. Shelby tube samples have arrived at Athens for analysis.

Burial of drums has occurred at this site, however, it could be expected that any contaminated ground water would flush out through the Stump Gap Creek. The creek, though stagnant, showed no visible sign of leachate contamination at the present. Water samples were taken by the SAD personnel.

Fred G. Wolf  
Hydrogeologist

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region IV, Athens, GA

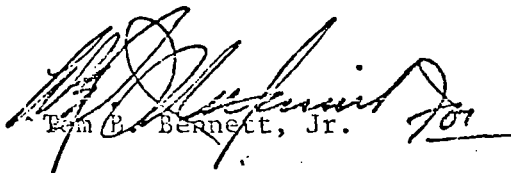
DATE: August 20, 1979

SUBJECT: 13.68 Acre Farm, Kentucky - Metals Analyses of Core Samples

FROM: Chief, Analytical Services Section  
Laboratory Services Branch

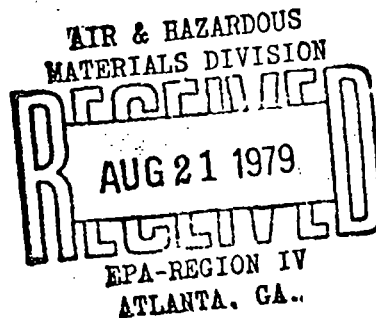
TO: Mike Carter, Chief  
Water Surveillance Branch

Attached are results of metals analyses on subject core samples received by Laboratory Services Branch on June 29, 1979.

  
Tom B. Bennett, Jr.

Enclosures

cc: John White  
Alec Little  
Sanford Harvey  
Jim Finger  
Tom Devine  
Paul Traina  
Mark McClanahan  
Al Smith



PROJECT KY - Core Samples

CHEMIST W. H. McDaniel REC'D 6/29/79

COMPL'D 8/15/79

SAD NO.	79C	1740	1742		
SOURCE & STATION		Ca6-3/5T	CA6-8/10T		
DATE/TIME		6/26/79 @1100	6/26/79 @ 1110		
ELEMENT (mc/kg)					
Silver	01078	<1	<1		
Arsenic	01003	<10	<16		
Boron	01023	-	-		
Barium	01008	128	129		
Beryllium	01013	<2	<2		
Cadmium	01028	<2	<2		
Cobalt	01038	-	-		
Chromium	01029	26	24		
Copper	01043	18	18		
Molybdenum	01063	-	-		
Nickel	01068	24	27		
Lead	01052	15	13		
Antimony	01098	<10	<10		
Selenium	01148	<16	<16		
Tin	01103	<20	<20		
Strontium	01083	18	18		
Tellurium		<16	<16		
Titanium	01153	170	151		
Thallium		-	-		
Vanadium	01088	42	40		
Yttrium		14	15		
Zinc	01093	70	71		
Zirconium	01163	<1	<1		
Mercury					
Silicon		-	-		
Calcium	00917	1400	1270		
Magnesium	00924	3600	3500		
Aluminum	01108	19800	19100		
Iron	01170	35400	33400		
Manganese	01053	880	800		
Sodium	00934	<100	<100		
Percent Moisture (Z)		15%	19%		



PROJECT K. Core Samples

CHEMIST W. H. McDannel REC'D 6/26/79

COMPL'D 8/15/79

SAD NO.	79C-1745	79C 1746		
SOURCE & STATION	CA7-3/5T	CA7-3/5B		
DATE/TIME	6/26/79 @1145	6/26/79 @1145		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<16	<20		
Boron 01023	-	-		
Barium 01008	178	192		
Beryllium 01013	<2	<2		
Cadmium 01028	<2	<2		
Cobalt 01038	-	-		
Chromium 01029	30	30		
Copper 01043	24	25		
Molybdenum 01063	-	-		
Nickel 01068	37	37		
Lead 01052	17	18		
Antimony 01098	<16	<16		
Selenium 01148	<16	<16		
Tin 01103	<20	<25		
Strontium 01083	21	21		
Tellurium	<16	<20		
Titanium 01153	118	115		
Thallium	-	-		
Vanadium 01088	57	57		
Yttrium	18	18		
Zinc 01093	103	94		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	2600	2600		
Magnesium 00924	4900	4800		
Aluminum 01108	27400	26700		
Iron 01170	40,000	41,600		
Manganese 01053	1,200	1,300		
Sodium 00934	100	100		
Percent Moisture (%)	20%	19%		

PROJECT KY - Core Samples CHEMIST W. H. McDaniel REC'D 6/26/79 COMPL'D 8/15/79

SAD NO.	79C-1747	79C-1748		
SOURCE & STATION	CA7-8/10T	CA7-13/15T		
DATE/TIME	6/26/79 @1200	6/26/79 @1210		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<13	<10		
Boron 01023	-	-		
Barium 01008	184	58		
Beryllium 01013	<2	<1		
Cadmium 01028	<2	<2		
Cobalt 01038	-	-		
Chromium 01029	29	12		
Copper 01043	22	10		
Molybdenum 01063	-	-		
Nickel 01068	41	12		
Lead 01052	14	5		
Antimony 01098	<13	<4		
Selenium 01148	<20	<4		
Tin 01103	<20	<5		
Strontium 01083	17	9		
Tellurium	<20	<10		
Titanium 01153	67	109		
Thallium	-	-		
Vanadium 01088	55	16		
Yttrium	17	9		
Zinc 01093	93	36		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	2000	1000		
Magnesium 00924	5000	1700		
Aluminum 01108	24500	8500		
Iron 01170	42500	9600		
Manganese 01053	1400	90		
Sodium 00934	100	<100		
Percent Moisture (Z)	19%	19%		

PROJECT KY - Core Samples

CHEMIST W. H. McDaniel

REC'D 6/26/79

COMPL'D 8/15/79

SAD NO.		79C-1749	79C-1750	
SOURCE & STATION		CA7-18/20T	CA8-3/5T	
DATE/TIME		6/26/79 @	6/26/79 @ 1415	
ELEMENT (mc/kg)				
Silver 01078		<1	<1	
Arsenic 01003		<10	<10	
Boron 01023		-	-	
Barium 01008		63	145	
Beryllium 01013		<2	<2	
Cadmium 01028		<2	<2	
Cobalt 01038		-	-	
Chromium 01029		15	24	
Copper 01043		12	31	
Molybdenum 01063		-	-	
Nickel 01068		24	28	
Lead 01052		9	13	
Antimony 01098		<8	<16	
Selenium 01148		<8	<16	
Tin 01103		<10	<20	
Strontium 01083		13	22	
Tellurium		<10	<20	
Titanium 01153		146	182	
Thallium		-	-	
Vanadium 01088		24	44	
Yttrium		11	16	
Zinc 01093		54	76	
Zirconium 01163		1	<1	
Mercury				
Silicon		-	-	
Calcium 00917		1300	1800	
Magnesium 00924		2200	3900	
Aluminum 01108		10600	21,000	
Iron 01170		15500	34900	
Manganese 01053		150	970	
Sodium 00934		<100	<100	
Percent Moisture (%)		19%	19%	

PROJECT KY - Core Samples

CHEMIST W. H. McDaniel

REC'D 6/26/79

COMPL'D 8/15/79

SAD NO.	79C-1751	79C-1752		
SOURCE & STATION	CA8-3/5B	CA8-8/10T		
DATE/TIME	6/26/79 @1415	6/26/79 @1430		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<10	<10		
Boron 01023	-	-		
Barium 01008	133	94		
Beryllium 01013	<2	<2		
Cadmium 01028	<2	<2		
Cobalt 01038	-	-		
Chromium 01029	22	17		
Copper 01043	17	20		
Molybdenum 01063	-	-		
Nickel 01068	26	20		
Lead 01052	11	9		
Antimony 01098	<10	<12		
Selenium 01148	<16	<12		
Tin 01103	<20	<15		
Strontium 01083	18	14		
Tellurium	<16	<10		
Titanium 01153	157	137		
Thallium	-	-		
Vanadium 01088	39	28		
Yttrium	15	11		
Zinc 01093	70	52		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	1700	1100		
Magnesium 00924	3500	2400		
Aluminum 01108	19000	12100		
Iron 01170	32900	25300		
Manganese 01053	800	750		
Sodium 00934	<100	<100		
Percent Moisture (%)	20%	12%		

PROJECT 4 - Core Samples CHEMIST W. H. McDaniel REC'D 6/26/79 COMPI'D 8/15/79

SAD NO.	79C-1753	79C-1754		
SOURCE & STATION	CA8-13/14T	CA8/18/20T		
DATE/TIME	6/26/79 @1440	6/26/79 @1450		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<8	<8		
Boron 01023	-	-		
Barium 01008	50	115		
Beryllium 01013	<2	<2		
Cadmium 01028	<2	<2		
Cobalt 01038	-	-		
Chromium 01029	12	23		
Copper 01043	21	21		
Molybdenum 01063	-	-		
Nickel 01068	12	30		
Lead 01052	9	17		
Antimony 01098	<8	<10		
Selenium 01148	<8	<16		
Tin 01103	<10	<20		
Strontium 01083	12	18		
Tellurium	<8	<16		
Titanium 01153	123	140		
Thallium	-	-		
Vanadium 01088	19	36		
Yttrium	11	13		
Zinc 01093	40	89		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	1200	2400		
Magnesium 00924	1600	3300		
Aluminum 01108	7700	16800		
Iron 01170	13900	32700		
Manganese 01053	90	750		
Sodium 00934	<100	<100		
Percent Moisture (%)	16%	22%		



PROJECT KY - Core Samples

CHEMIST W. H. McDaniel

REC'D 6/26/79

COMPL'D 8/15/79

SAD NO.	79C-1755	17C-1756		
SOURCE & STATION	CA9-5T	CA9-5B		
DATE/TIME	6/27/79 @ 1105	6/27/79 @ 1105		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<10	<10		
Boron 01023	-	-		
Barium 01008	175	172		
Beryllium 01013	<2	<2		
Cadmium 01028	<2	<2		
Cobalt 01038	-	-		
Chromium 01029	25	25		
Copper 01043	22	20		
Molybdenum 01063	-	-		
Nickel 01068	34	30		
Lead 01052	13	11		
Antimony 01098	<16	<16		
Selenium 01148	<16	<16		
Tin 01103	<20	<20		
Strontium 01083	19	17		
Tellurium	<16	<16		
Titanium 01153	143	111		
Thallium	-	-		
Vanadium 01088	49	44		
Yttrium	16	14		
Zinc 01093	88	82		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	2200	2200		
Magnesium 00924	4500	4300		
Aluminum 01108	24000	21300		
Iron 01170	39800	39100		
Manganese 01053	1100	1400		
Sodium 00934	<100	<100		
Percent Moisture (%)	18%	17%		

PROJECT KY - Core Samples

CHEMIST W. H. McDaniel REC'D 6/26/79

COMPL'D 8/15/79

SAD NO.	79C-1757	79C1758		
SOURCE & STATION	CA9-8/10T	CA9-13/15T		
DATE/TIME	6/27/79 @1115	6/26/79 @1125		
ELEMENT (mg/kg)				
Silver 01078	<1	<1		
Arsenic 01003	<10	<10		
Boron 01023	-	-		
Barium 01003	168	67		
Beryllium 01013	<2	<1		
Cadmium 01028	<2	<1		
Cobalt 01038	-	-		
Chromium 01029	25	12		
Copper 01043	20	8		
Molybdenum 01063	-	-		
Nickel 01068	30	13		
Lead 01052	<10	5		
Antimony 01098	<16	<8		
Selenium 01148	<16	<8		
Tin 01103	<20	<10		
Strontium 01083	20	13		
Tellurium	<16	<8		
Titanium 01153	133	120		
Thallium	-	-		
Vanadium 01088	43	20		
Yttrium	14	9		
Zinc 01093	76	38		
Zirconium 01163	<1	<1		
Mercury				
Silicon				
Calcium 00917	1900	1200		
Magnesium 00924	4200	1800		
Aluminum 01108	21000	9500		
Iron 01170	35300	15100		
Manganese 01053	1000	240		
Sodium 00934	<100	<100		
Percent Moisture (%)	18%	15%		

PROJECT 1 - core Samples CHEMIST W. H. McDaniel REC'D 6/26/79 COMPL'D 8/15/79

SAD NO.	79C-1759			
SOURCE & STATION	CA9-18/20T			
DATE/TIME	6/27/79 @1140			
ELEMENT (mg/kg)				
Silver 01078	<1			
Arsenic 01003	<3			
Boron 01023	-			
Barium 01008	40			
Beryllium 01013	<1			
Cadmium 01028	<1			
Cobalt 01038	-			
Chromium 01029	10			
Copper 01043	8			
Molybdenum 01063	-			
Nickel 01068	12			
Lead 01052	5			
Antimony 01098	<4			
Selenium 01148	<4			
Tin 01103	<5			
Strontium 01083	11			
Tellurium	<4			
Titanium 01153	124			
Thallium	-			
Vanadium 01088	13			
Yttrium	9			
Zinc 01093	32			
Zirconium 01163	1			
Mercury				
Silicon				
Calcium 00917	1300			
Magnesium 00924	1400			
Aluminum 01108	6000			
Iron 01170	8400			
Manganese 01053	87			
Sodium 00934	<100			
Percent Moisture (%)	20%			

DATE: FEB 9 1979

SUBJECT: Study Plan --Environmental Monitoring Activities Drum Storage  
Facilities near Louisville, KY

FROM: Chief, Engineering Section

TO: Addressees

SUMMARY

Attached is the subject study plan for monitoring of the Louisville, Kentucky drum storage facilities. These monitoring activities will commence the week of February 12-16, 1979, weather permitting.

ACTION

Information only.

BACKGROUND

Memo: "Summary of SAD's Future responsibilities at Drum storage. Facilities near Louisville, KY., James H. Finger to John C. White, January 24, 1979.

*M. D. Lair*

M. D. Lair

Addressees:S & A Division

Finger  
Carter  
Lair  
Bennett/Carroll  
Davis  
Barrow  
Hitchcock  
Vick

Air and Hazardous

Devine  
Scarborough/Dickinson

Water Division

Foster  
Hutchison  
Coker  
Wolf

Enforcement Division

Traina  
Allen/Turnipseed

STUDY PLAN  
ENVIRONMENTAL MONITORING ACTIVITIES  
DRUM STORAGE FACILITIES NEAR LOUISVILLE, KY  
FEBRUARY 12-16, 1979

INTRODUCTION

This study plan outlines the environmental monitoring of the drum storage facilities near Louisville, KY which will be conducted beginning the week of February 12, 1979 by the Water Surveillance Branch, Surveillance and Analysis Division, in conjunction with the Water Supply Branch, Water Division. Specifically, this study plan addresses the monitoring activities which will be conducted at the following drum storage sites:

- 13.68 Acre Farm, Jefferson County
- The Brickyard, Hardin County
- A. J. Taylor Site (Valley of the Drums), Bullitt County

These investigations are being conducted to identify the magnitude of soil contamination (if any) at each site, to monitor any possible contamination of groundwater supplies, and to determine if runoff from these sites has contaminated area surface waters.

SCOPE AND TIME SCHEDULE

All of the investigations outlined in this study plan are preliminary in nature and will provide a data base on current conditions at the drum storage sites. These data will be used to provide information for future "clean-up" activities and to design future monitoring programs (if needed) of these storage sites. These studies will begin the week of February 12, 1979 and proceed until they are finished. The entire study is contingent on weather conditions and the availability of equipment.

SPECIFIC MONITORING PROGRAMS

The specific monitoring programs for each storage site are outlined in this section. Specific study methodologies are outlined in the following section.

13.68 Acre Farm (First Priority)

The monitoring program to be conducted at the farm will include coring of soil within the drum storage areas and monitoring of water and sediment of Stump Gap Creek and the Salt River, as well as limited monitoring of well water supplies.

The coring program will be under the direction of Water Division personnel, and the specific sites are outlined on aerial photographs. There are fifteen sites within the study area. The water and sediment sampling will consist of six samples which include upstream and downstream samples from the storage site in Stump Gap Creek, samples from Pond Creek at a point upstream and downstream from the confluence of Stump Gap Creek, and samples from the Salt River at a point upstream and downstream from the confluence with Pond Creek. See Figure 1 for sampling location.

## Brickyard (Second Priority)

The same sampling regiment of core sampling used at the 13.68 acre farm will be followed at the brickyard. Personnel from the Water Division have outlined eight coring sites on aerial photographs of the storage site. One specific location will be near an artesian well located on the property. Water and sediment samples will be collected in Bee Branch upstream and downstream from the confluence of the unnamed tributary to Bee Branch. A water and sediment sample will also be collected from the Salt River at a point downstream from the confluence of Bee Branch at the Salt River. The downstream sample will be dictated by the flow conditions of the Ohio River. See Figure 2 for sampling locations.

## A. J. Taylor Site (Valley of the Drums), (Third Priority)

The coring will be conducted at seven sites selected by Water Division personnel and are marked on aerial photographs. The same sampling regiment as outlined for the 13.68 acre farm and the brickyard will be followed. A series of six water and sediment samples from natural drainage courses within the storage valley will be collected if weather conditions permit. Water and sediment samples will also be collected from eight to ten points within the Wilson Creek, Southern Ditch, and Pond Creek drainage system. See Figure 1 for sampling locations. Four private wells in the vicinity of the storage site will be sampled. Two of these wells are located updip from the storage site and will serve as background samples. See Figure 3 for sample locations.

## SAMPLING METHODOLOGY

### Core Sampling

The cores are to be augered in place by use of a hollow steam auger to a depth of eighteen feet. The equipment and personnel to operate the rigs will be on loan from the State of Kentucky Highway Department. Water Supply personnel will supervise the site location and make a geological log of each core. These data will be included on the field sheet corresponding to each core site.

Four samples per core will be obtained. These samples will be taken and comprise the uppermost two feet of core (the surface), from four to six feet, from ten to twelve feet, and from sixteen to eighteen feet, respectively (feet indicate depth from surface). Each two foot composite samples will be placed in solvent rinsed glass quart containers, labeled and sealed. The Shelby tube sampling device will be rinsed with water and rinsed with acetone before taking each sample. The auger will be rinsed with water before each use.

In the event of striking an impermeable layer (i.e., clay or silt), having a thickness greater than two feet, an alternate site will be selected by Water Supply personnel at a radius of 50 feet from the original site. If a coarse grained material is encountered and solid material is not retrievable by core, that material will be sampled by pumping water.



## Water and Sediment Samples

Well Samples -- When samples are collected from wells, the water will be allowed to run at least five minutes before collecting the sample. Each sample (VOA, extractable organic and metals) will be labeled and sealed.

Water Quality Samples -- Grab samples for volatile organics, extractable organics, and metals will be collected at mid-depth, center channel locations. Multiple depth samples may be collected if stream depths exceed ten feet. The samples will be labeled and sealed.

Sediment Samples -- Where possible, an Ekman Dredge will be used to collect a representative sediment sample. In the event of a rocky or gravel bottom, a pool or quiescent area will be selected that will yield a sediment sample. The sample will be placed into solvent rinsed one-quart glass containers. The sample will be properly labeled and sealed. The dredge will be rinsed with stream water, Milli-Q water, and final rinse with acetone before reuse.

### Sample Chain-of-Custody

Each sample will be stored in ice chests maintained at 4°C in locked vehicles until returned to the SAD laboratory in Athens, GA for analysis. A field sheet will be maintained for each sample. The following identification codes will be used:

#### Core Samples

13.68 Acre Farm (1-15) CA1-2, CA1-4/6, CA1-10/12, CA1-16/18  
Brickyard (1-8) CB1-2, CB1-4/6, CB1-10/12, CB1-16/18  
A. J. Taylor Site (1-7) CC1-2, CC1-4/6, CC1-10/12, CC1-16/18

#### Well Samples - Near 13.68 Acre Farm

16706 Abbott Beach Road WCM-1  
Constance Morris

16810 Abbott Beach Road WHD-1  
Harold Davis

17108 Abbott Beach Road WTK-1  
Thomas E. Kasey

Fort Knox Water Supply WFK-1  
West Point Water Supply WWP-1

#### Well Samples -- Near A. J. Taylor Site

Charlie Judd WCJ-1  
10820 National Turnpike  
Fairdale, KY

Mary L. Murphy WMM-1  
2104 Smith Road  
Fairdale, KY

Parsley Harle WP-1  
Brooks, KY

U. T. Sweeney, Jr. WUS-1  
P. O. Box 241  
Brooks, KY

Water and Sediment Samples from

A. J. Taylor Site-drainage ditches AT-1 through AT-6

Stream Samples

Salt River - SR-1 - SR-X, beginning upstream  
Pond Creek - PC-1 - PC-X, beginning upstream  
Bee Branch - BB-1, BB-2  
Southern Ditch - SD-1 - SD-X, beginning upstream  
Wilson Creek - WC-1 - WC-X, beginning upstream  
Stump Gap Creek\* - STC-2 - STC-1, beginning downstream

\*In order to match previous station numbers, this station is numbered with the upstream samples as number 2.

The following applies to the analyses of samples received:

1. Organic Analyses

- a. Waste Samples (Drums) - General organic scans will be performed with minimum detection limits (MDL) of about 100 ppm.
- b. Environmental Water Samples - Same as 1.a. with MDL of about 1 ppb.
- c. Environmental Solid Samples (Sediments & Solids) - Same as 1.a. with MDL of about 1 ppm.

2. Metals Analyses

- a. Waste Samples (Drums) - Screening by induced plasma technique will be used to determine presence or absence of metals at the 100-1,000 ppm MDL.
- b. Environmental Water Samples - Samples will be analyzed for metals determined from 2.a. at the 10-100 ppb MDL.
- c. Environmental Solid Samples (Soil & Sediments) - Same as 2.a. with MDL of about 1 ppm.

3. General

- a. All minimum detection limits should be considered as rough estimates at this time. Better estimates will be made after some initial analyses of the wastes are made and certain metals and organics are identified as major waste contaminants.

The following samples will be collected:

<u>Location &amp; Number</u>	<u>No. of Samples</u>	<u>Sample Type</u>
<u>13.68 Acre Farm</u>		
CA1-2 - CA15-2	15	Organics, metals
CA1-4/6 - CA15-4/6	15	Organics, metals
CA1-10/12 - CA15-10/12	15	Organics, metals
CA1-16/18 - CA15-16/18	15	Organics, metals
<u>Stump Gap Creek</u>		
STC-2	1*	VOA, organics, metals
STC-1	1*	VOA, organics, metals
<u>DOMESTIC WATER SUPPLIES</u>		
<u>13.68 Acre Farm Area</u>		
FK-1	1	VOA, organics, metals
WP-1	1	VOA, organics, metals
WCM-1	1	VOA, organics, metals
WHD-1	1	VOA, organics, metals
WTK-1	1	VOA, organics, metals
<u>Brickyard</u>		
CB1-2 - CB8-2	8	Organics, metals
CB1-4/6 - CB8-4/6	8	Organics, metals
CB1-10/12 - CB8-10/12	8	Organics, metals
CB1-16/18 - CB8-16/18	8	Organics, metals
<u>Unnamed Tributary at Bee Branch</u>		
BB-1	1*	VOA, organics, metals
BB-2	1*	
<u>Salt River</u>		
SR-1	1*	VOA, organics, metals
SR-2	1*	VOA, organics, metals
<u>A. J. Taylor Site (Valley of the Drums)</u>		
CC1-2 - CC7-2	7	Organics, metals
CC1-4/6 - CC7-4/6	7	Organics, metals
CC1-10/12 - CC7-10/12	7	Organics, metals
CC1-16/18 - CC7-16/18	7	Organics, metals
<u>DOMESTIC WELL SAMPLES</u>		
<u>Vicinity of A. J. Taylor Site</u>		
WCJ-1	1	VOA, organics, metals
WMM-1	1	VOA, organics, metals
WPH-1	1	VOA, organics, metals
WUS-1	1	VOA, organics, metals
<u>WATER AND SEDIMENT SAMPLES</u>		
<u>A. J. Taylor Site</u>		
AT-1 - AT-6	6*	VOA, organics, metals
<u>Wilson Creek, Southern Ditch Pond Creek Drainage System</u>		
WC-1 - WC-4	4*	VOA, organics, metals
SD-1 - SD-2	2*	VOA, organics, metals
PC-1 - PC-3	3*	VOA, organics, metals

\* Indicates that a sediment or soil sample will also be collected in addition to water sample.

PERSONNEL

Core Drilling Team

F. Wolf, Water Supply Branch  
W. R. Davis, Water Surveillance Branch  
Shane Hitchcock, Water Surveillance Branch

Water Quality Team

Ron Barrow, Water Surveillance Branch  
Hugh Vick, Water Surveillance Branch

LOGISTICS

February 12 - Travel to Louisville, KY  
February 13-16 - On Duty  
February 17 - Return to Athens, GA

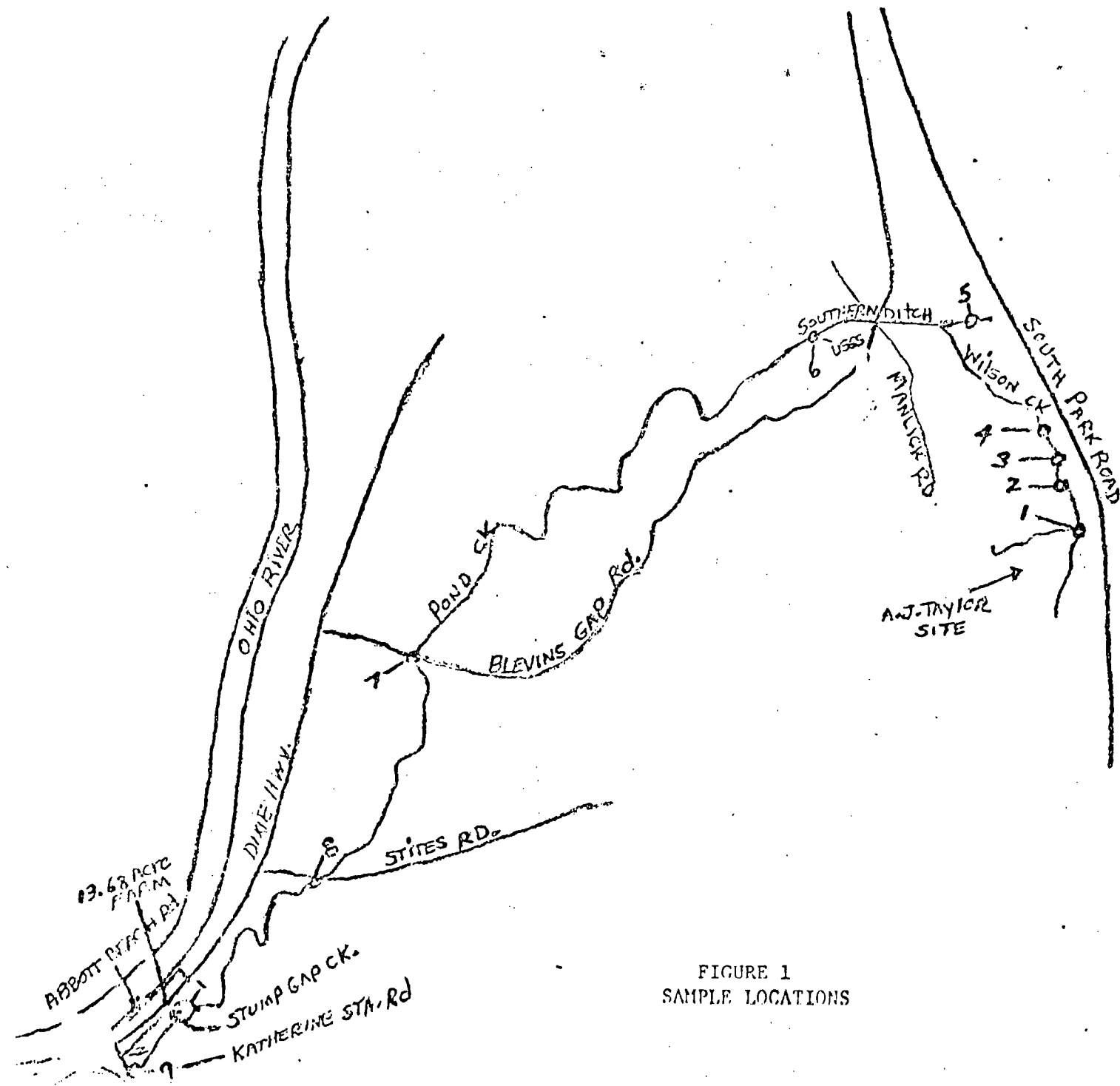
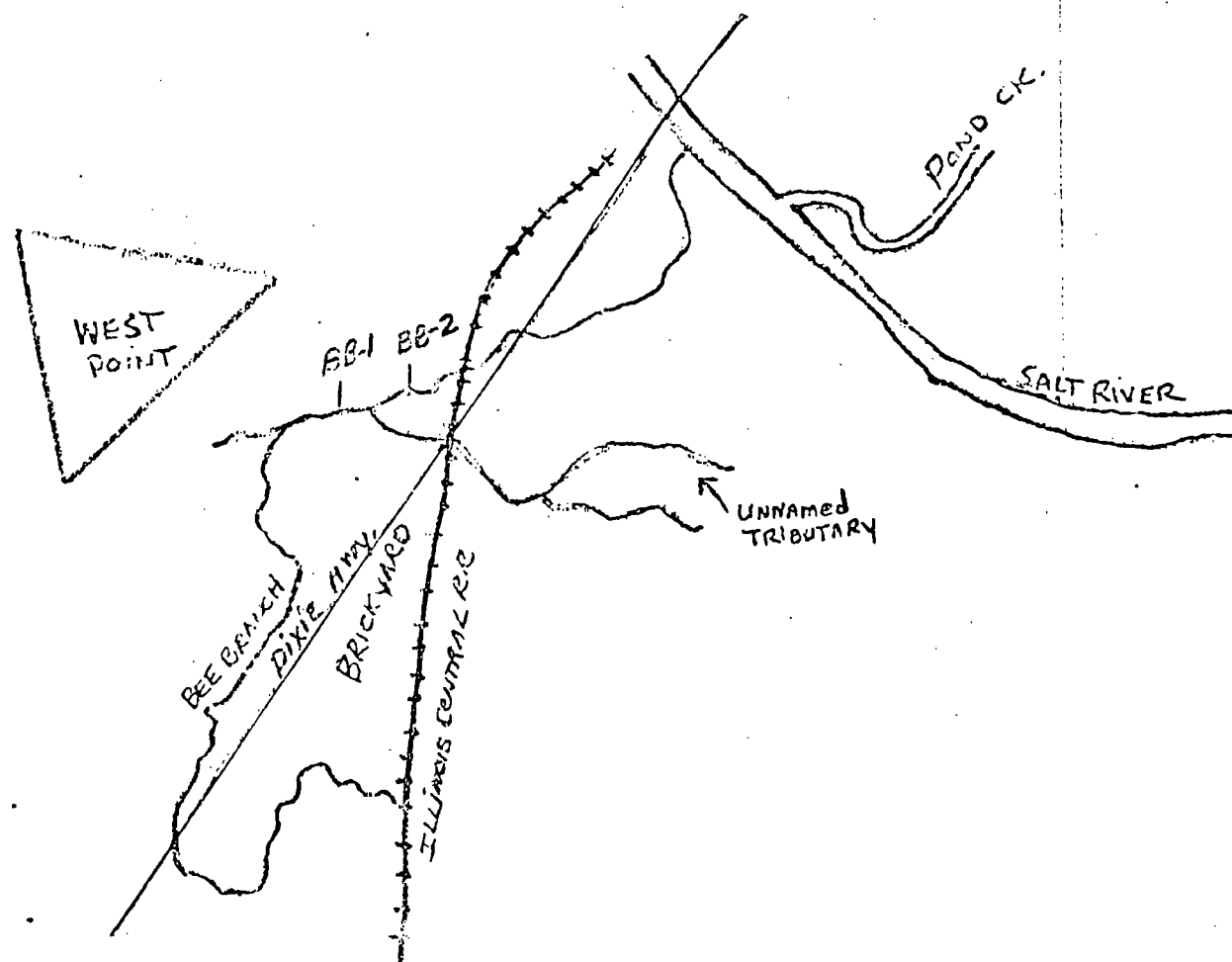


FIGURE 1  
SAMPLE LOCATIONS

BRICKYARD SAMPLE LOCATIONS







UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ATHENS, GA

DATE: JAN 19 1979

SUBJECT: Investigation of Selected Surface Water and Groundwater Supplies,  
Jefferson and Hardin Counties, KY, January 10-11, 1979

FROM: Chief, Water Surveillance Division

TO: Paul Traina

SUMMARY

Attached is a copy of the subject investigation.

Based on the data collected, the domestic and private water supplies were not contaminated from seepage or runoff from the chemical drum storage sites during our investigation.

Stump Gap Creek upstream from the drum disposal area at the farm and the West Point raw water will be resampled during the week of January 22, 1979.

ACTION

For your information.

It is my understanding that the Water Supply Branch will forward analytical results of the private and public wells to the appropriate individuals and municipal or military officials.

Michael R. Carter *MR*

cc: with report  
Alec Little  
Sarah Turnipseed  
Tom Devine/John Dickinson  
Asa Foster/Gary Hutchinson  
Jim Finger

INVESTIGATION OF SELECTED SURFACE WATERS  
AND GROUNDWATER STUDIES  
JEFFERSON AND HARDIN COUNTIES, KENTUCKY  
JANUARY 10-11, 1979

GENERAL

Messrs. Michael R. Carter and William R. Davis, Water Surveillance Branch, US-EPA, Clark Bledsoe, Jefferson County Health Department, and Roger Conn, Kentucky Department for Natural Resources and Environmental Protection, Solid Waste Division, conducted a water quality and domestic groundwater study of possible contaminated water in conjunction with the clean-up operation at the 13.68 acre farm in Jefferson County, KY and the Brickyard drum storage site in Hardin County, KY during January 10-11, 1979.

SAMPLE LOCATIONS

13.68 Acre Farm

Surface water samples were collected from two locations (Figure 1) in Stump Gap Creek. One sample (STG-1) was collected approximately 200 yards downstream from the drum disposal area and the other sample (STG-2) was collected approximately 0.5 mile upstream from the drum disposal area at the culvert under Katharyn Station Road.

Four samples were collected from private wells located (Figure 1) in the vicinity of the farm. However, there were no wells located southeast, or downgrade, of the drum disposal area. The well water samples were collected from the cold water tap located within the residences after allowing the water to run for more than five minutes. The following provides pertinent information relative to the groundwater samples:

<u>Station No.</u>	<u>Address</u>	<u>Type Well</u>	<u>Depth of Well</u>
BLC-1	Mrs. Effie Sevremes Bennies First & Last Chance 16611 Dixie Highway West Point, KY 40177	Drilled	100 feet
CM-1	Constance Morris 16706 Abbott Beach Rd. West Point, KY 40177	Drilled	75 feet
HD-1	Harold Davis 16810 Abbott Beach Rd. West Point, KY 40177	Drilled	65 feet
TK-1	Thomas Kasey 17108 Abbott Beach Rd. West Point, KY 40177	Drilled	Unknown

Wells at the following locations were located within 100 feet of the Ohio River; CM-1, HD-1, and TK-1. The well at Station BLC-1 was located approximately 300 feet from the Ohio River.

### Brickyard

One surface water sample (BB-1) was collected from an unnamed tributary to Bee Branch (Figure 2). The sample site is located immediately downgrade from the Brickyard between the Illinois Central Railroad and U. S. Highway 31W.

Groundwater samples were collected from three locations in the vicinity of the Brickyard (Figure 2) as described below:

<u>Station No.</u>	<u>Address</u>	<u>Type Well</u>	<u>Depth of Well</u>
BP-1	Bill Priddly Auto Co. 22600 Dixie Highway West Point, KY 40177	Drilled	Unknown
FK-1	Joe Chaudoin Director of Facilities Engineering Environmental and Energy Control Office Fort Knox, KY 40121	Drilled	110-160 feet
WP-1	West Point Water Dept. 509 Elm Street West Point, KY 40177	Drilled	Unknown

Station BP-1 was the only private well located near the Brickyard. This well is approximately 0.4 mile south of the Brickyard.

Stations FK-1 and WP-1 are public water supply systems serving Fort Knox (and Muldrough, KY) and West Point, KY, respectively. The sample from Station FK-1 was collected prior to chlorination. Although the investigators were informed that the sample from Station WP-1 was collected prior to chlorination, it was determined after the analyses were completed that it was a finished water sample with chlorine.

### SAMPLING PROCEDURES

Samples for non-volatile organic analysis were collected directly into solvent rinsed one quart glass containers with Teflon lined lids. Samples for volatile organic analysis were collected directly into specially prepared 60 ml glass vials.

All samples were kept refrigerated from time of collection until delivery to the EPA laboratory in Athens, GA. Chain-of-custody was maintained on all samples.

## RESULTS

No hexachlorocyclopentadiene, octachlorocyclopentene, or hexachlorobenzene were detected in any sample (minimum detection limit - 1  $\mu\text{g/l}$ ). No chlorinated hydrocarbon pesticides were found in any sample (minimum detection limit - 1  $\mu\text{g/l}$ ). No other nonchlorinated, extractable organics were detected in any sample (minimum detection limit - 2  $\mu\text{g/l}$ ). No other volatile organic compounds were detected at concentrations greater than 5  $\mu\text{g/l}$ .

Chlorinated and brominated compounds were detected in the sample collected from Station WP-1. However, the results of analyses are questionable since the sample was collected and prepared in the laboratory as non-chlorinated raw water. Some of the chlorinated compounds are indicative of contamination resulting from the extraction of a chlorinated sample with methylene chloride.

The only surface water sample which contained organic compounds was Station STC-2, Stump Gap Creek upstream from the farm. Two benzene-sulfonamide compounds, tentatively identified as trimethyl benzene sulfonamide and butyl methyl benzene sulfonamide, had estimated concentrations of 13.0  $\mu\text{g/l}$  and 6.2  $\mu\text{g/l}$ , respectively. These compounds were not identified in the drums during EPA's 1977 investigation. Toluene was identified in the VOA sample at 74  $\mu\text{g/l}$ . This compound was identified in several of the drums during the 1977 investigation. However, the sample integrity is questionable since the sample container was cracked and had partially leaked prior to analyses. Because of the severe flood in December 1978 and the frozen conditions during the investigation, the samples which were collected do not represent typical conditions. Organic compounds may be detectable in the water phase during dry weather conditions and immediately following the snowmelt or rainstorm events. Also, there is a higher probability of detecting organic compounds in sediments than in the water phase. Because of the ice, it was not possible to collect representative sediment samples.

# ANALYTICAL RESULTS

## Sample STC-2 (Stump Gap Creek)

	Concentration <u>µg/l</u>
Trimethyl benzene sulfonamide	13 <sup>1/2/</sup>
Butyl methyl benzene sulfonamide	6.2 <sup>1/2/</sup>
2 unidentified compounds	5 <sup>1/2/</sup>
Toluene	74 <sup>4/</sup>

- 1/ - Estimated concentrations.  
2/ - Tentative identifications.  
3/ - The compounds were not identified in the laboratory blank.  
4/ - Identified; however, sample container was cracked and sample had partially leaked out. The sample integrity is questionable and results of analyses should not be used.

## Sample WP-1 (West Point)<sup>5/</sup>

	Concentration <u>µg/l</u>
Naphthalene	3.4 <sup>4/</sup>
Bromochlorocyclohexane	19 <sup>1/4/</sup>
Chlorocyclohexanol <sup>2/</sup>	3.4 <sup>1/4/</sup>
Dichlorocyclohexane (2 isomers) <sup>2/</sup>	11 <sup>1/4/</sup>
Bromocyclohexanol <sup>2/</sup>	140 <sup>1/4/</sup>
Bromochlorocyclohexanol <sup>2/</sup>	<1 <sup>1/4/</sup>
2 unidentified brominated compounds	<1 <sup>1/4/</sup>
Bromoform	Trace <5 <sup>3/</sup>
Dibromochloromethane	5.2 <sup>3/</sup>

- 1/ - Estimated concentration compared to naphthalene.  
2/ - Tentative identification.  
3/ - These compounds were not detected in either the laboratory or field blank.  
4/ - These compounds were not detected in the laboratory blank.  
5/ - All results of analyses are questionable since the sample was collected and prepared in the laboratory as a nonchlorinated raw water. Some of the chlorinated compounds are indicative of contamination resulting from the extraction of a chlorinated sample with methylene chloride.



The following minimum detection levels apply to all samples.

	<u>µg/l</u>
Hexachlorocyclopentadiene	1
Hexachloronorbornadiene	1
Octachlorocyclopentene	1
Heptachloronorbornene	1
Hexachlorobenzene	1
Chlorinated Pesticides	1
Other Nonchlorinated Organics	2

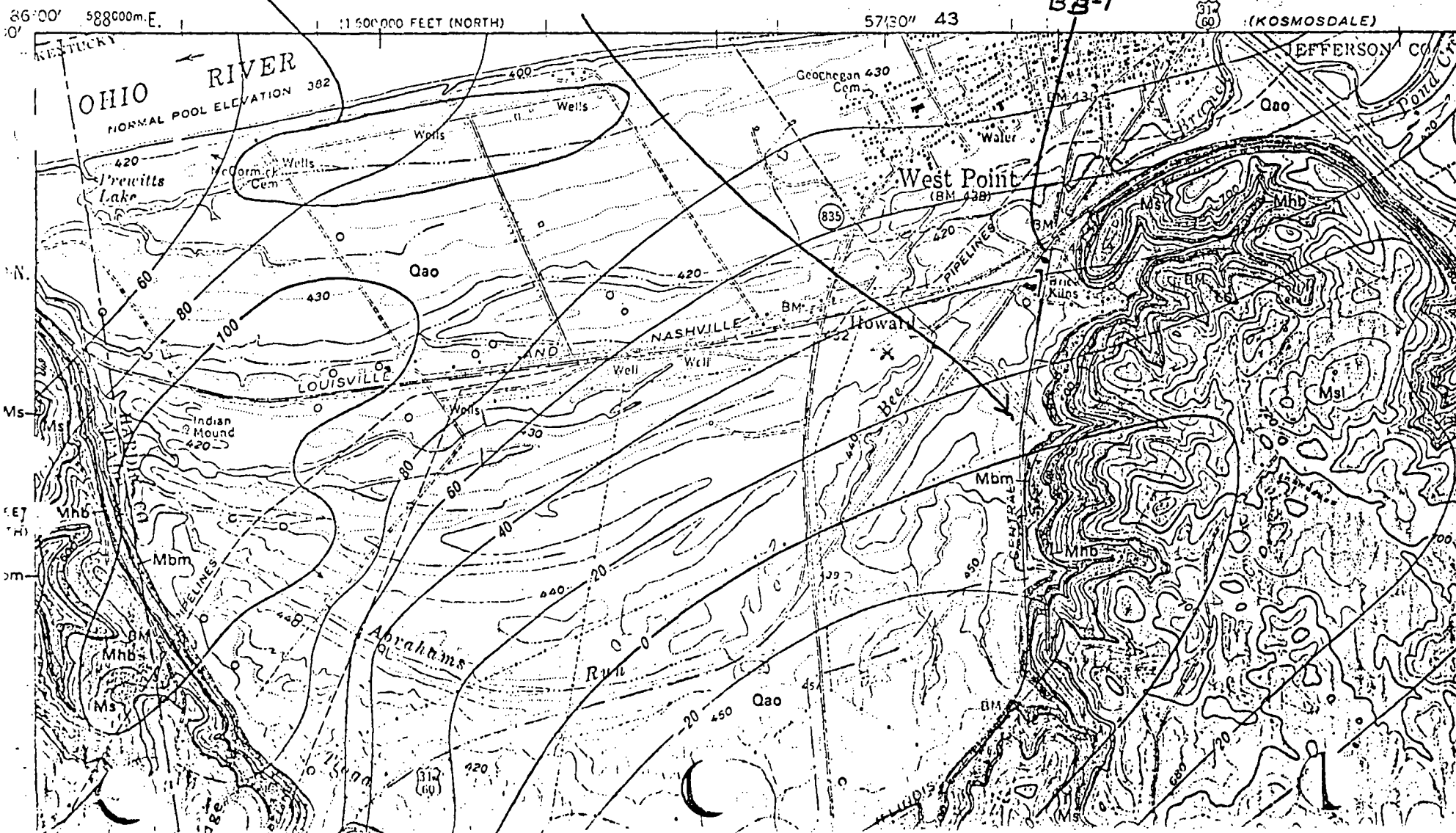
Figure 2  
SAMPLE LOCATIONS  
NEAR BRICKYARD

PREPARED IN COOPERATION WITH  
THE COMMONWEALTH OF KENTUCKY, UNIVERSITY OF KENTUCKY  
KENTUCKY GEOLOGICAL SURVEY  
WALLACE W. HAGAN, DIRECTOR AND STATE GEOLOGIST

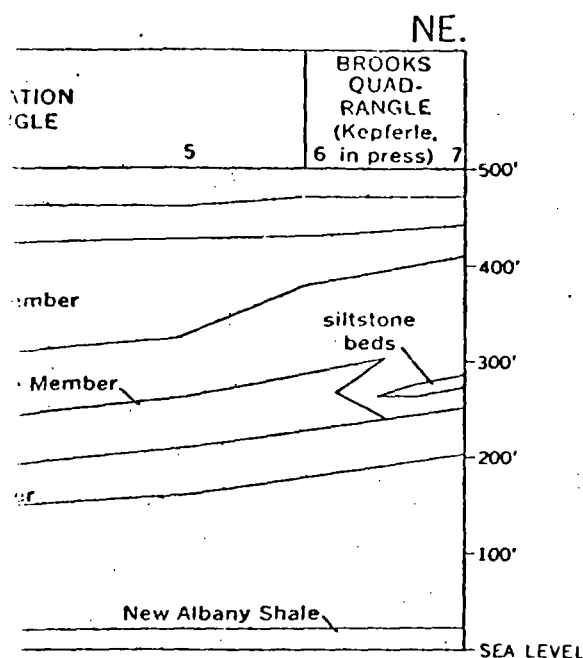
Fort Knox  
Well Field

BP-1

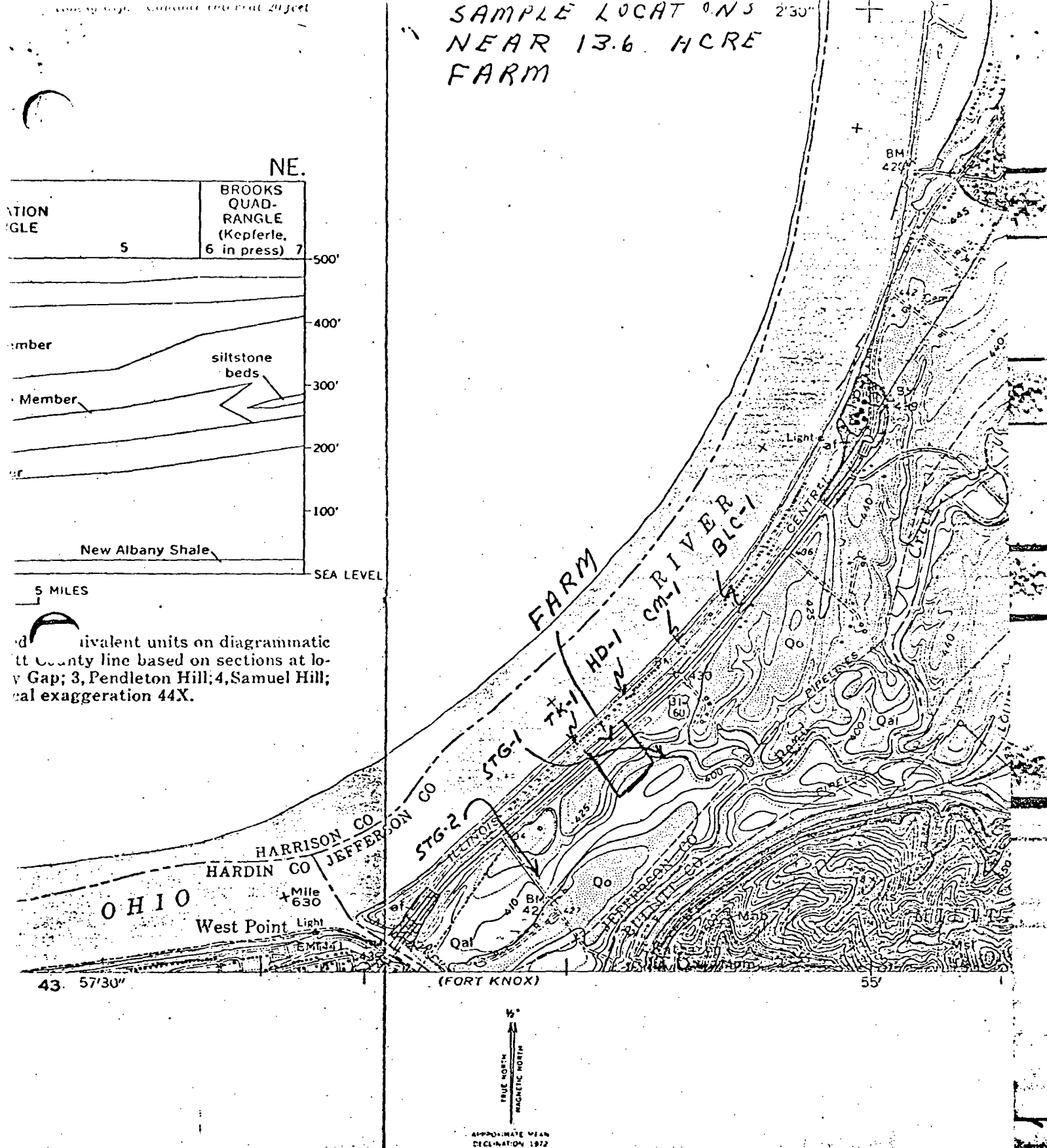
B8-1



SAMPLE LOCATIONS  
NEAR 13.6 HCRE  
FARM



divalent units on diagrammatic  
County line based on sections at  
Gap; 3, Pendleton Hill; 4, Samuel Hill;  
cal exaggeration 44X.



# GEOLOGIC MAP OF THE VALLEY STATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ATHENS, GEORGIA 30605

DATE: MAY 17 1979

SUBJECT: Investigation of Smith's Dump Site Near Sheperdsville, Kentucky

FROM: Water Surveillance Branch

TO: See Below

THRU: M. D. Lair, Chief *MDL*  
Engineering Section

SUMMARY

Bob Sholar, Environmental Specialist with the Division of Hazardous Material and Waste Management, Kentucky Department for Natural Resources and Environmental Protection, Jim Kopotic (US-EPA, SAD), and myself visited the Smith Dump site on April 19, 1979. We checked with the operator, Mr. Glen Bray, for permission to inspect the site.

The "dump" is located in a remote valley consisting of approximately 500 acres. The farm has been used by local citizens for years as a place to discard junk. There were large piles of solid waste which ranged from lumber to automobile seats. There were some empty drums, but not any sizable collection. There was no evidence of pits or trenches being used for liquid or sludge disposal in the valley.

A permitted site (5 acres) is being operated for waste disposal on a knoll above the office area. We located three open pits containing oily-chemical wastes in the permitted area. Two of the sites were of recent construction and contained oily-chemical smelling wastes along with a large number of drums. Leachate was leaking from the general area and surfacing into a drainage ditch at the base of the hill.

The following samples were collected:

- Leachate -- water and sediment
- Tributary upstream -- water (no sediment sample was collected because of gravel bottom)
- Tributary downstream -- water and sediment

ACTION

For your information.

BACKGROUND

Continuing investigations into the Louisville Drum Storage sites,  
Louisville, Kentucky.

*William R. Davis*  
William R. Davis

Addressees:

Enforcement Division

Turnipseed  
Stonebraker

Air & Hazardous Materials

Devine  
Scarborough/Dickinson

Water Division

Traina  
Hutchinson/McClanahan

S&A Division

Finger/Adams  
Lair/Carter  
Carroll/Bennett  
Tebo

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
ATHENS, GEORGIA 30605

DATE: JUN 20 1979

SUBJECT: Status Report for Smith's Dump Site Near Shepherdsville, KY

FROM: Water Surveillance Branch

TO: See Below

THRU: M. D. Lair, Chief  
Engineering Section

SUMMARY

Analyses of water and sediment samples collected from the unnamed tributary receiving leachate drainage from the Smith's Dump site did not indicate the presence of any pesticides, PCB's or other chlorinated compounds. The leachate stream itself was free of any of the same compounds. However, screening of extractable organic compounds did reveal the presence of several unidentified organic compounds ranging from <5 to 5,000 µg/l (parts per billion). Metal analyses for the water and sediment samples collected from the unnamed tributary did not reveal any metal concentrations of concern. Metal analyses from the leachate stream were relatively low, while the sediment contained 1,032 µg/g (parts per million) of chromium and 104 µg/g of lead. When the extractable organics analyses are completed, those data will be forwarded.

ACTION

For your information and use.

BACKGROUND

Memo from William R. Davis dated May 17, 1979: "Investigation of Smith's Dump Site near Shepherdsville, KY."

*William R. Davis*  
William R. Davis

Attachment

Addressees:

Enforcement Division  
Turnipseed  
Stonebraker

AHMD  
Devine  
Scarborough/Dickinson

Water Division  
Traina  
Hutchinson/McClanahan

S&A Division  
Finger/Adams  
Lair/Carter  
Carroll/Bennett  
Tebo



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region IV, Athens, GA

DATE: June 1, 1979

SUBJECT: Results of Volatile Organic Analyses, Water Samples,  
Smith's Dump, Sheperdsville, KY

FROM: Chief, Analytical Services Section  
Laboratory Services Branch

TO: Doug Lair, Chief  
Engineering Section

Attached are the results of volatile organic analysis performed  
on the subject samples, received by LSB on 4/20/79.

These samples were analyzed by Versar, Inc., Springfield, Virginia.  
Their reported quality control data supports the validity of these  
analyses.

Analyses were performed by purge and trap gas chromatography/mass  
spectrometry.



Tom B. Bennett, Jr.

Enclosures

SAD No.	79C 1028	79C 1029	79C 1032
SOURCE & STATION	BL-1, Approx. 100 yds. upstream from Leachate Streams	BL-2, Bluelick Creek, Downstream from Stream lead- ing from site	SS-1, Leachate Stream, base of Hill, above Rd. Downstream of Pond
DATE/TIME	4/19/79 @ 1615	4/19/79 @ 1645	4/19/79 @ 1620
COMPOUND units - ug/l			
Chloromethane	ND (1)	ND (1)	ND (1)
Bromomethane	ND (1)	ND (1)	ND (1)
Vinyl Chloride	ND (1)	ND (1)	4
Chloroethane	ND (1)	ND (1)	ND (1)
Methylene Chloride	ND (1)	ND (1)	330
Trichlorofluoromethane	ND (1)	ND (1)	ND (1)
1,1-Dichloroethylene	ND (1)	ND (1)	ND (1)
1,1-Dichloroethane	ND (1)	ND (1)	ND (1)
Trans-1,2-Dichloroethene	ND (1)	ND (1)	ND (1)
Chloroform	ND (1)	ND (1)	1
1,2-Dichloroethane	ND (1)	ND (1)	ND (1)
1,1,1-Trichloroethane	ND (1)	ND (1)	15
Carbontetrachloride	ND (1)	ND (1)	ND (1)
Bromodichloromethane	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	ND (1)	ND (1)	ND (1)
Trans-1,3-Dichloropropene	ND (1)	ND (1)	ND (1)
Trichloroethylene	ND (1)	ND (1)	30
Benzene	ND (1)	ND (1)	5
Cis-1,3-Dichloropropene	ND (1)	ND (1)	ND (1)
1,1,2-Trichloroethane	ND (1)	ND (1)	3
Dibromochloromethane	ND (1)	ND (1)	ND (1)
Bromoform	ND (1)	ND (1)	ND (1)
Tetrachloroethylene	ND (1)	ND (1)	3
1,1,2,2,-Tetrachloroethane	ND (1)	ND (1)	ND (1)
Toluene	ND (1)	ND (1)	285
Chlorobenzene	ND (1)	ND (1)	1
Ethyl Benzene	ND (1)	ND (1)	44
Acrolein	ND (10)	ND (10)	ND (10)
Acrylonitrile	ND (10)	ND (10)	11

ND - None Detected; number in parenthesis is the minimum detection limit.

DATE: JUL 13 1979

SUBJECT: Extractable Organic Data for Smith's Dump Site, Shepherdsville, Kentucky

FROM: Water Surveillance Branch

TO: Devine/Scarborough

SUMMARY

The sediment analysis of the leachate stream (SS-1) contained 3.3 mg/kg of Aroclor 1248, but no other PCB's or pesticides were detected. Six organic compounds listed on the NRDC list of Priority Pollutants were detected at trace concentrations while bis (2-ethylhexyl) phthalate was found at a concentration of 2,000 mg/kg. In addition to the above list of compounds, 28 organic compounds were either positively or tentatively identified in the sediment. The highest concentrations were two Alkyl Benzene group of isomers detected at 140 and 190 mg/kg, respectively. The sediment sample collected from the receiving stream downstream from the leachate stream was free of organic compounds.

The leachate water sample (SS-1) contained 5 compounds listed on the NRDC list of Priority Pollutants including phenol at 5,900 µg/l and 2,4 dimethylphenol at 1,900 µg/l. Additionally, 22 other organic compounds were detected including: methyl phenol (2 isomers), 9,700 µg/l; methyl pyrrolidinone, 860 µg/l; methylpropoxypropanol, 680 µg/l; C<sub>4</sub> Alkyl-bibenzyl (2 isomers), 450 µg/l; and Butylmethylpropyl Phthalate, 300 µg/l. The upstream (BL-1) and downstream (BL-2) receiving water samples did not contain any organic compounds at a concentration greater than 5 µg/l.

This completes all analytical work and data reporting for the Smith Dump Site.

ACTION

For your information and use.

BACKGROUND

Memos from William R. Davis dated May 17, 1979, "Investigation of Smith's Dump Site near Shepherdsville, Kentucky," and Status Report for Smith's Dump Site near Shepherdsville, Kentucky, dated June 20, 1979.

*William R. Davis*

William R. Davis

Attachment

cc: Turnipseed  
Stonebraker  
Traina  
Hutchinson/McClanahan

Finger/Adams  
Lair/Carter  
Carroll/Bennett

DATA REPORTING SHEET - Water  
EXTRACTABLE ORGANIC ANALYSIS

EPA, SAD, RGN. IV  
Athens, GA 6/79

PROJECT Smith's Dump  
Shepardsville, KY

CHEMIST E. W. Loy, Jr. REC'D. 4/20/79 COMPL'D. 6/21/79

NO.	79C-1028		
SOURCE & STATION	BL-1		
DATE/TIME	4-19-79 @ 1615		
Compounds on NEDC List of Priority Pollutants	Estimated Concentration (ug/l)	Estimated Concentration	Estimated Concentration
17. bis(chloromethyl) ether	NA	NA	NA
51. N-nitrosodimethylamine	NA		
25. 1,2-dichlorobenzene	ND (5)		
26. 1,3-dichlorobenzene	ND (5)		
27. 1,4-dichlorobenzene	ND (5)		
18. bis(2-chloroethyl) ether	ND (5)		
12. hexachloroethane	ND (5)		
42. bis(2-chloroisopropyl) ether	ND (5)		
53. N-nitrosodi-n-propylamine	ND (5)		
36. nitrobenzene	ND (5)		
52. hexachlorobutadiene	ND (5)		
8. 1,2,4-trichlorobenzene	ND (5)		
55. naphthalene	ND (5)		
43. bis(2-chloroethyl) methane	ND (5)		
54. isophorone	ND (5)		
53. hexachlorocyclopentadiene	ND (5)		
20. 2-chloronaphthalene	ND (5)		
77. acenaphthylene	ND (5)		
1. acenaphthene	ND (5)		
71. dimethyl phthalate	ND (5)		
35. 2,4-dinitrotoluene	ND (5)		
36. 2,6-dinitrotoluene	ND (5)		
40. 4-chlorophenyl phenyl ether	ND (5)		
30. fluorene	ND (5)		
70. diethyl phthalate	ND (5)		
37. 1,2-diphenylhydrazine <sup>2/</sup>	ND (5)		
52. N-nitrosodiphenylamine <sup>3/</sup>	ND (5)		
9. hexachlorobenzene	ND (5)		
41. 4-bromophenyl phenyl ether	ND (5)		
81. phenanthrene <sup>4/</sup>	ND (5)		
78. anthracene <sup>4/</sup>			
58. di-n-butyl phthalate	ND (5)		
39. fluoranthene	ND (5)		
34. pyrene	ND (5)		
57. butyl benzyl phthalate	ND (5)		
5. benzidine	NA		
56. bis(2-ethylhexyl) phthalate	ND (5)		
76. chrysene <sup>5/</sup>	ND (5)		
72. 1,2-benzanthracene <sup>5/</sup>			
28. 3,3'-dichlorobenzidine	ND (5)		
59. di-n-octyl phthalate	ND (5)		
74. 3,4-benzofluoranthene <sup>6/</sup>	NA		
75. 11,12-benzofluoranthene <sup>6/</sup>			
73. 3,4-benzopyrene	NA		
33. indeno (1,2,3-cd) pyrene	NA		
52. 1,2,5,6-dibenzanthracene	NA		
9. 1,12-benzoperylene	NA		
24. 2-chlorophenol	NA		
57. 2-nitrophenol	ND (5)		
5a. phenol (GC/MS)	ND (5)		
24. 2,4-dimethylphenol	ND (5)		
51. 2,4-dichlorophenol	ND (5)		
1. 2,4,6-trichlorophenol	ND (5)		
2. parachlorometa cresol	ND (5)		
9. 2,4-dinitrophenol	ND (5)		
10. 4,6-dinitro-o-cresol	ND (5)		
4. pentachlorophenol	ND (5)		
8. 4-nitrophenol	ND (5)		

EPA, SAD, RGN. 14  
Athens, GA 6/79

CHEMIST E. W. Loy, Jr. REC'D. 4-20-79 COMPL'D. 6-21

MDL - Minimum Detection Limit, (number in parenthesis).  
T - Trace.  
ND - None detected at greater than MDL.  
NA - Not Analyzed.  
1/ - Tentative Identification.  
2/ - and/or azobenzene.  
3/ - and/or diphenylamine.  
4/ - Phenanthrene and/or anthracene.  
5/ - Chrysene and/or 1,2-benzanthracene.  
6/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

DATA REPORTING SHEET - Water  
EXTRACTABLE ORGANIC ANALYSIS

EPA, SAD, RGN. IV  
Athens, GA 6/79

PROJECT Smith's Dump, Shepardsville, KY CHEMIST E. W. Loy, Jr. REC'D. 4/20/79 COMPL'D. 6/21/79

SAD NO.	79C-1029		
SOURCE & STATION	BL-2		
DATE/TIME	4-19-79 @ 1645		
Compounds on NRDC List of Priority Pollutants	Estimated Concentration (ug/l)	Estimated Concentration	Estimated Concentration
17. bis(chloromethyl) ether	NA	NA	NA
11. N-nitrosodimethylamine	NA		
15. 1,2-dichlorobenzene	ND (5)		
16. 1,3-dichlorobenzene	ND (5)		
17. 1,4-dichlorobenzene	ND (5)		
18. bis(2-chloroethyl) ether	ND (5)		
12. hexachloroethane	ND (5)		
12. bis(2-chloroisopropyl) ether	ND (5)		
13. N-nitrosodi-n-propylamine	ND (5)		
16. nitrobenzene	ND (5)		
12. hexachlorobutadiene	ND (5)		
18. 1,2,4-trichlorobenzene	ND (5)		
15. naphthalene	ND (5)		
13. bis(2-chloroethoxy) methane	ND (5)		
14. isophorone	ND (5)		
13. hexachlorocyclopentadiene	ND (5)		
10. 2-chloronaphthalene	ND (5)		
17. acenaphthylene	ND (5)		
11. acenaphthene	ND (5)		
11. dimethyl phthalate	ND (5)		
15. 2,4-dinitrotoluene	ND (5)		
16. 2,6-dinitrotoluene	ND (5)		
13. 4-chlorophenyl phenyl ether	ND (5)		
10. fluorene	ND (5)		
10. diethyl phthalate	ND (5)		
17. 1,2-diphenylhydrazine 2/	ND (5)		
12. N-nitrosodiphenylamine 3/	ND (5)		
9. hexachlorobenzene	ND (5)		
11. 4-bromophenyl phenyl ether	ND (5)		
15. phenanthrene 4/	ND (5)		
8. anthracene 4/			
8. di-n-butyl phthalate	ND (5)		
9. fluoanthene	ND (5)		
14. pyrene	ND (5)		
7. butyl benzyl phthalate	ND (5)		
5. benzidine	NA		
6. bis(2-ethylhexyl) phthalate	ND (5)		
6. chrysene 5/	ND (5)		
2. 1,2-benzanthracene 5/			
8. 3,3'-dichlorobenzidine	ND (5)		
9. di-n-octyl phthalate	ND (5)		
4. 3,4-benzofluoranthene 6/	NA		
5. 11,12-benzofluoranthene 6/			
3. 3,4-benzopyrene	NA		
3. indeno (1,2,3-cd) pyrene	NA		
2. 1,2,5,6-dibenzanthracene	NA		
9. 1,12-benzoperylene	NA		
4. 2-chlorophenol	ND (5)		
7. 2-nitrophenol	ND (5)		
5a. phenol (GC/MS)	ND (5)		
4. 2,4-dimethylphenol	ND (5)		
1. 2,4-dichlorophenol	ND (5)		
1. 2,4,6-trichlorophenol	ND (5)		
2. parachlorometa cresol	ND (5)		
3. 2,4-dinitrophenol	ND (5)		
0. 4,6-dinitro-o-cresol	ND (5)		
4. pentachlorophenol	ND (5)		
3. 4-nitrophenol	ND (5)		

(OVER)



PROJECT Smith's Dump CHEMIST E. W. Loy, Jr. REC'D. 4-20-79 COMPL'D. 6-21-79  
Shepardsville, KY

[illegible]

MDL - Minimum Detection Limit, (number in parenthesis).

T - Trace.

ND - None detected at greater than MDL.

NA - Not Analyzed.

1/ - Tentative Identification.

2/ - and/or azobenzene.

3/ - and/or diphenylamine.

4/ - Phenanthrene and/or anthracene.

5/ - Chrysene and/or 1,2-benzanthracene.

6/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

PROJECT Smith's Dump  
Shepardsville, KYCHEMIST E. W. Loy, Jr. REC'D. 4/20/79 COMPL'D. 6/21/79

SAD NO.	79C1030		
SOURCE & STATION	BL-2		
DATE/TIME	4-19-79 @ 1645		
Compounds on NRDC List of Priority Pollutants:	Estimated Concentration (mg/kg)	Estimated Concentration	Estimated Concentration
17. bis(chloromethyl) ether	NA	NA	NA
51. N-nitrosodimethylamine	NA		
25. 1,2-dichlorobenzene	ND (5)		
26. 1,3-dichlorobenzene	ND (5)		
27. 1,4-dichlorobenzene	ND (5)		
18. bis(2-chloroethyl) ether	ND (5)		
12. hexachloroethane	ND (5)		
42. bis(2-chloroisopropyl) ether	ND (5)		
53. N-nitrosodi-n-propylamine	ND (5)		
56. nitrobenzene	ND (5)		
52. hexachlorobutadiene	ND (5)		
8. 1,2,4-trichlorobenzene	ND (5)		
55. naphthalene	ND (5)		
43. bis(2-chloroethyl) methane	ND (5)		
54. isophorone	ND (5)		
53. hexachlorocyclopentadiene	ND (5)		
20. 2-chloronaphthalene	ND (5)		
77. acenaphthylene	ND (5)		
1. acenaphthene	ND (5)		
71. dimethyl phthalate	ND (5)		
35. 2,4-dinitrotoluene	ND (5)		
36. 2,6-dinitrotoluene	ND (5)		
40. 4-chlorophenyl phenyl ether	ND (5)		
50. fluorene	ND (5)		
0. diethyl phthalate	ND (5)		
37. 1,2-diphenylhydrazine <sup>2/</sup>	ND (5)		
2. N-nitrosodiphenylamine <sup>3/</sup>	ND (5)		
9. hexachlorobenzene	ND (5)		
1. 4-bromophenyl phenyl ether	ND (5)		
1. phenanthrene <sup>4/</sup>	ND (5)		
78. anthracene <sup>4/</sup>			
8. di-n-butyl phthalate	ND (5)		
9. fluoranthene	ND (5)		
4. pyrene	ND (5)		
7. butyl benzyl phthalate	ND (5)		
5. benzidine	NA		
6. bis(2-ethylhexyl) phthalate	ND (5)		
6. chrysene <sup>5/</sup>	ND (5)		
2. 1,2-benzanthracene <sup>5/</sup>			
8. 3,3'-dichlorobenzidine	ND (5)		
9. di-n-octyl phthalate	ND (5)		
4. 3,4-benzofluoranthene <sup>6/</sup>	NA		
5. 1,12-benzofluoranthene <sup>6/</sup>			
3. 3,4-benzopyrene	NA		
3. indeno (1,2,3-cd) pyrene	NA		
2. 1,2,5,6-dibenzanthracene	NA		
9. 1,12-benzoperylene	NA		
4. 2-chlorophenol	ND (5)		
7. 2-nitrophenol	ND (5)		
5a. phenol (GC/MS)	ND (5)		
4. 2,4-dimethylphenol	ND (5)		
1. 2,4-dichlorophenol	ND (5)		
1. 2,4,6-trichlorophenol	ND (5)		
2. parachlorometa cresol	ND (5)		
9. 2,4-dinitrophenol	ND (5)		
0. 4,6-dinitro-o-cresol	ND (5)		
4. pentachlorophenol	ND (5)		
3. 4-nitrophenol	ND (5)		

[illegible]

6/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

Smith's Dump  
OBJECT Shepardsville, KY

CHEMIST W. H. McDaniel

REC D 4/20/79

With Louisville Ky  
COMPL'D 5/15/79

ID No.		79C 1030	79C 1031		
SOURCE & STATION		BL-2 Bluelick Cr. Downstream fr. Str. Leading fr. Site	SS-1 Leachate Str. Base of Hill abv. Rd. downstream Pd.		
DATE/TIME		4/19/79 @ 1645	4/19/79 @ 1600		
ELEMENT (UG/G)					
Aluminum	01078	<0.96	<1		
Barium	02003	-	-		
Boron	01023	-	-		
Bromine	01048	114	327		
Calcium	01013	<1.5	<1		
Chromium	01028	<5	<3		
Cobalt	01038	-	-		
Copper	01029	29	1032		
Lead	01043	24	186		
Molybdenum	01063	-	-		
Nickel	01068	60	50		
Rad.	01052	33	104		
Strontium	01098	-	<5		
Selenium	01148	-	<5		
Vanadium	01103	<5	<5		
Zinc	01083	15	21		
Chlorine		-	-		
Titanium	01153	42	58		
Sodium		<10	<10		
Manganese	01088	69	37		
Strontium		10	8		
Iron	01093	175	224		
Chromium	01163	<0.98	<1		
TEST (UG/G)					
Silica		-	-		
Calcium	00917	1373	2300		
Magnesium	00924	5490	5300		
Aluminum	01108	16275	11700		
Iron	01170	105098	36800		
Manganese	01053	931	340		
Sodium	00934	98	200		

# DATA REPORTING SHEET - WATER

PROJECT Smith's Dump  
Louisville, KY

CHEMIST W. H. McDaniel

REC'D 4/20/79

COMPL'D 5/15/79

AD No.		79C 1032			
SOURCE & STATION		SS-1 Leachate Stream Base of Hill above Rd.			
DATE/TIME		Dwn Str. Pd.			
CONCENTRATION (UG/L)					
Aluminum	01077	<10			
Barium	01002	<25			
Boron	01022	-			
Cadmium	03007	353			
Cerium	01012	<10			
Chromium	01027	<10			
Cobalt	01037	<20			
Copper	03034	32			
Lead	01042	24			
Lithium	01062	<20			
Mercury	01067	<20			
Nickel	01051	<30			
Platinum	01097	<30			
Rhenium	01147	<40			
Silver	01102	<50			
Selenium	01082	463			
Silicon	01064	<40			
Tantalum	01152	<20			
Vanadium	01059	<100			
Zinc	01087	<10			
Antimony	01203	<10			
Chlorine	01092	31			
Fluorine	01162	<10			
CONCENTRATION (MG/L)					
Calcium	00956				
Magnesium	00916	72			
Iron	00927	49			
Aluminum	01105	0.8			
Copper	01045	7.6			
Lead	01055	2.4			
Vanadium	00929	72			

Pesticides/PCB Extracts

## DATA REPORTING SHEET - Sediments

Project Smith Dump

Shepardsville, KY

CHEMIST E. W. Lcy, Jr.

RECEIVED April 20, 1979

COMPLETED May 15, 1979

mg/kg

ANALYSES TO BE RUN

[illegible]

OBJECT Smith Dump  
Shepardsville, KY

CHEMIST E.W. Loy, Jr

EC'D.4/20/79 COMPL'D. 6/26/79

AD NO.	79C 1031		
SOURCE & STATION	SS-1		
DATE/TIME	4/19/79/1600		
Compounds on NADC List of Priority Pollutants	Estimated Concentration (mg/Kg)	Estimated Concentration	Estimated Concentration
1. bis(chloromethyl) ether	NA	NA	NA
2. N-nitrosodimethylamine	NA		
3. 1,2-dichlorobenzene	ND(50)		
4. 1,3-dichlorobenzene	ND(50)		
5. 1,4-dichlorobenzene	ND(50)		
6. bis(2-chloroethyl) ether	ND(50)		
7. hexachloroethane	ND(50)		
8. bis(2-chloroisopropyl) ether	ND(50)		
9. N-nitrosodi-n-propylamine	ND(50)		
10. nitrobenzene	ND(50)		
11. hexachlorobutadiene	ND(50)		
12. 1,2,4-trichlorobenzene	ND(50)		
13. naphthalene	T<50		
14. bis(2-chloroethoxy) methane	ND(50)		
15. isophorone	ND(50)		
16. hexachlorocyclopentadiene	ND(50)		
17. 2-chloronaphthalene	ND(50)		
18. acenaphthylene	ND(50)		
19. acenaphthene	ND(50)		
20. dimethyl phthalate	ND(50)		
21. 2,4-dinitrotoluene	ND(50)		
22. 2,6-dinitrotoluene	ND(50)		
23. 4-chlorophenyl phenyl ether	ND(50)		
24. fluorene	T<(50)		
25. diethyl phthalate	ND(50)		
26. 1,2-diphenylhydrazine <sup>2/</sup>	ND(50)		
27. N-nitrosodiphenylamine <sup>3/</sup>	ND(50)		
28. hexachlorobenzene	ND(50)		
29. 4-bromophenyl phenyl ether	ND(50)		
30. phenanthrene <sup>4/</sup>			
31. anthracene <sup>4/</sup>	T<50		
32. di-n-butyl phthalate	ND(50)		
33. fluoranthene	ND(50)		
34. pyrene	ND(50)		
35. butyl benzyl phthalate	T<50		
36. benzidine	NA		
37. bis(2-ethylhexyl) phthalate	2000		
38. chrysene <sup>5/</sup>	ND(50)		
39. 1,2-benzanthracene <sup>2/</sup>			
40. 3,3'-dichlorobenzidine	ND(50)		
41. di-n-octyl phthalate	ND(50)		
42. 3,4-benzofluoranthene <sup>6/</sup>	NA		
43. 11,12-benzofluoranthene <sup>6/</sup>			
44. 3,4-benzopyrene	NA		
45. indeno (1,2,3-cd) pyrene	NA		
46. 1,2,5,6-dibenzanthracene	NA		
47. 1,12-benzonervlene	NA		
48. 2-chlorophenol	ND(50)		
49. 2-nitrophenol	ND(50)		
50a. phenol (GC/MS)	T<50		
51. 2,4-dimethylphenol	T<50		
52. 2,4-dichlorophenol	ND(50)		
53. 2,4,6-trichlorophenol	ND(50)		
54. parachlorometa cresol	ND(50)		
55. 2,4-dinitrophenol	ND(50)		
56. 4,6-dinitro-o-cresol	ND(50)		
57. pentachlorophenol	ND(50)		
58. 4-nitrophenol	ND(50)		



PROJECT

Smith Dump  
Shepardsville, KY

CHEMIST

E. W. Loy, Jr. R<sup>1</sup> D. 4/20/79

COMPL'D. 6/26/79

SAD NO.	79C 1031		
SOURCE & STATION	SS-1		
DATE/TIME	4/19/79/ 1600		
COMPOUND	Estimated Concentration mg/kg	Estimated Concentration	Estimated Concentration
Xylene (2 isomers)	53		
C <sub>3</sub> Alkyl Benzene (3 isomers)	140		
C <sub>4</sub> Alkyl Benzene <sup>1/</sup> (5 isomers)	190		
C <sub>5</sub> Alkyl Benzene <sup>1/</sup> (2 isomers)	TK50		
C <sub>2</sub> Alkylnaphthalene <sup>1/</sup>	TK50		
C <sub>3</sub> Alkylnaphthalene <sup>1/</sup> (2 isomers)	TK50		
C <sub>4</sub> Alkylnaphthalene <sup>1/</sup>	TK50		
C <sub>6</sub> Alkenylnaphthalene <sup>1/</sup>	91		
Phthalic Acid <sup>1/</sup>	94		
Dimethylphenylmethylbenzene <sup>1/</sup>	TK50		
Methyl ester of Methylpentadecanoic Acid <sup>1/</sup>	TK50		
Propanoic Acid <sup>1/</sup>	TK50		
Phenylbutanone <sup>1/</sup>	TK50		
Methylbutanoic Acid <sup>1/</sup>	TK50		
Methylphenol	TK50		
C <sub>2</sub> AlkylPhenol (4 isomers)	TK50		
C <sub>3</sub> Alkylphenol <sup>1/</sup> (3 isomers)	TK50		
(continued next page)			

- MDL - Minimum Detection Limit, (number in parenthesis).
- T - Trace.
- ND - None detected at greater than MDL.
- NA - Not Analyzed.
- <sup>1/</sup> - Tentative Identification.
- <sup>2/</sup> - and/or azobenzene.
- <sup>3/</sup> - and/or diphenylamine.
- <sup>4/</sup> - Phenanthrene and/or anthracene.
- <sup>5/</sup> - Chrysene and/or 1,2-benzanthracene.
- <sup>6/</sup> - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.



OBJECT Smith Dump  
 Shepardsville, KY

CHEMIST E. W. Loy, Jr.

C'D.4/20/79 COMPL'D.6/26/79

NO.	79C 1032		
SOURCE & STATION	SS-1		
DATE/TIME	4/19/79/1600		
Compounds on NRDC List of Priority Pollutants	Estimated Concen- tration	Estimated Concen- tration	Estimated Concen- tration
1. bis(chloromethyl) ether	NA	NA	NA
2. N-nitrosodimethylamine	NA		
3. 1,2-dichlorobenzene	ND(20)		
4. 1,3-dichlorobenzene	ND(20)		
5. 1,4-dichlorobenzene	ND(20)		
6. bis(2-chloroethyl) ether	ND(20)		
7. hexachloroethane	ND(20)		
8. bis(2-chloroisopropyl) ether	ND(20)		
9. N-nitrosodi-n-propylamine	ND(20)		
10. nitrobenzene	ND(20)		
11. hexachlorobutadiene	ND(20)		
12. 1,2,4-trichlorobenzene	ND(20)		
13. naphthalene	ND(20)		
14. bis(2-chloroethoxy) methane	ND(20)		
15. isophorone	2000		
16. hexachlorocyclopentadiene	ND(20)		
17. 2-chloronaphthalene	ND(20)		
18. acenaphthylene	ND(20)		
19. acenaphthene	ND(20)		
20. dimethyl phthalate	130		
21. 2,4-dinitrotoluene	(ND(20))		
22. 2,6-dinitrotoluene	ND(20)		
23. 4-chlorophenyl phenyl ether	ND(20)		
24. fluorene	ND(20)		
25. diethyl phthalate	ND(20)		
26. 1,2-diphenylhydrazine <sup>2/</sup>	ND(20)		
27. N-nitrosodiphenylamine <sup>3/</sup>	ND(20)		
28. hexachlorobenzene	ND(20)		
29. 4-bromophenyl phenyl ether	ND(20)		
30. phenanthrene <sup>4/</sup>	ND(20)		
31. anthracene <sup>4/</sup>	ND(20)		
32. di-n-butyl phthalate	ND(20)		
33. fluoranthene	ND(20)		
34. pyrene	ND(20)		
35. butyl benzyl phthalate	ND(20)		
36. benzidine	NA		
37. bis(2-ethylhexyl) phthalate	ND(20)		
38. chrysene <sup>5/</sup>	ND(20)		
39. 1,2-benzanthracene <sup>5/</sup>	ND(20)		
40. 3,3'-dichlorobenzidine	ND(20)		
41. di-n-octyl phthalate	ND(20)		
42. 3,4-benzofluoranthene <sup>6/</sup>	NA		
43. 11,12-benzofluoranthene <sup>6/</sup>	NA		
44. 3,4-benzopyrene	NA		
45. indeno (1,2,3-cd) pyrene	NA		
46. 1,2,5,6-dibenzanthracene	NA		
47. 1,12-benzoperylene	NA		
48. 2-chlorophenol	20		
49. 2-nitrophenol	ND(20)		
50. phenol (GC/MS)	5900		
51. 2,4-dimethylphenol	1900		
52. 2,4-dichlorophenol	ND(20)		
53. 2,4,6-trichlorophenol	ND(20)		
54. parachlorometa cresol	ND(20)		
55. 2,4-dinitrophenol	ND(20)		
56. 4,6-dinitro-o-cresol	ND(20)		
57. pentachlorophenol	ND(20)		
58. 4-nitrophenol	ND(20)		



PROJECT Smith Dump  
Shepardsville, KYCHEMIST E. W. Loy, Jr.D. 4/20/79COMPL'D. 6/26/79

SAD NO.	79C 1032		
SOURCE & STATION	SS-1		
DATE/TIME	4/19/79 @ 1600		
COMPOUND	Estimated Concentration (ug/l)	Estimated Concentration	Estimated Concentration
Xylene (2 isomers)	130		
Methylpropoxypropanol <u>1/</u>	680		
Ethoxyethanol acetate <u>1/</u>	150		
Cyclohexanone <u>1/</u>	90		
Ethylhexanol <u>1/</u>	30		
Trimethylcyclohexanol <u>1/</u>	120		
Trimethylcyclohexanone <u>1/</u>	80		
Propoxybutane <u>1/</u>	170		
C <sub>4</sub> Alkylbibenzyl <u>1/</u> (2 isomers)	450		
Butylmethylpropyl Phthalate <u>1/</u>	300		
Methyl Phenol (8 isomers)	9700		
C <sub>2</sub> Alkyl Phenol (2 isomers)	220		
C <sub>3</sub> Alkyl Phenol <u>1/</u> (2 isomers)	91		
C <sub>4</sub> Alkyl Phenol <u>1/</u> (2 isomers)	TK20		
Methyl Pyrrolidinone <u>1/</u>	860		
Ethylhexanoic Acid <u>1/</u>	50		
Phthalic Acid <u>1/</u>	72		
Methyl Benzoic Acid <u>1/</u> (2 isomers)	65		
Benzenepropanoic Acid <u>1/</u>	20		
C <sub>3</sub> Alkyl Benzoic Acid <u>1/</u>	52		
C <sub>4</sub> Alkyl Benzoic Acid <u>1/</u>	26		
5 Unidentified Compounds	20-200		

DL - Minimum Detection Limit, (number in parenthesis).

- Trace.

D - None detected at greater than MDL.

A - Not Analyzed.

/ - Tentative Identification.

/ - and/or azobenzene.

/ - and/or diphenylamine.

/ - Phenanthrene and/or anthracene.

/ - Chrysene and/or 1,2-benzanthracene.

/ - 3,4-benzofluoranthene and/or 11,12-benzofluoranthene.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ATHENS, GEORGIA 30605

DATE: AUG 9 1979

SUBJECT: Investigation of Groundwater Supplies in the Vicinity of The Howe Valley Landfill, Hardin County, Kentucky -- June 27, 1979

FROM: Water Surveillance Branch

TO: Tom Devine, Director  
Air & Hazardous Materials Division

✓ Jim Scarbrough, Chief  
Residual Management Branch

SUMMARY

Attached is a copy of the report for the investigation of groundwater (wells) in the vicinity of the Howe Valley Landfill, Hardin County, Kentucky, on June 27, 1979. No metals of concern were detected in the samples. No volatile organic compounds were detected except for halomethane compounds in the Howe Valley School well water which is chlorinated.

ACTION

For your information and use.

BACKGROUND

Memo from Paul Traina to Jim Finger--"Groundwater Sampling of Private Wells in the vicinity of the Howe Valley Landfill-Howe Valley, Kentucky," dated June 27, 1979.

*William R. Davis*  
William R. Davis

Attachment

cc: Turnipseed/Allen  
Hutchinson/McClanahan  
McGhee  
Finger/Adams  
Carter/Lair  
Carroll/Bennett

INVESTIGATION OF HOWE VALLEY HAZARDOUS WASTE DUMP SITE  
HOWE VALLEY, KENTUCKY

INTRODUCTION

Messrs. William R. Davis, US-EPA, Water Surveillance Branch and Joe Thornton, Kentucky Department for Natural Resources & Environmental Protection (KY-DNREP) conducted an investigation of the abandoned landfill and nearby private wells in the Howe Valley Community, Kentucky, on June 27, 1979. The landfill was operated by Kentucky Industrial Services, Inc., between 1969 and 1976 to dispose of industrial wastes. The study was requested by the Water Supply Branch and the Kentucky Department of Natural Resources and Environmental Protection (KY-DNREP).

SUMMARY

The landfill is located in a low area behind a ridge which is occupied by several homes. The landfill covers about 10 acres and has been disturbed by earth moving equipment. Only a few drums were visible and they were partly buried. A large pile of foam insulation was in the center of the landfill with small amounts of the material scattered over the landfill. The perimeter of the landfill contained many dead and dying pine trees. A small pond occupied the lowest point of the landfill and was fed by an intermittent stream. The overflow from the pond empties into a sink-hole located down gradient from the pond. A dye tracer study recently conducted by the KY-DNREP showed that there was a positive connection between the sink-hole and a small stream that flows away from the ridge where the homes are located. See the attached photographs for a pictorial description of the landfill site.

SAMPLING METHODOLOGY

Water samples were collected from cold water faucets which were allowed to run for approximately five minutes at the following homes:

<u>NAME</u>	<u>SAMPLE STATION NO.</u>	<u>DATE</u>	<u>TIME</u>
Larry Moore	WM-1	6/27/79	1100
Issac Goodman	WIG-1	6/27/79	1115
Melvin Goodman	WMG-1	6/27/79	1130
Earl Goodman	WEG-1	6/27/79	1140
(well at Howe Valley School)			

Analysis for volatile organics and metals were conducted for each sample.



DISCUSSION OF FINDINGS

No metals concentrations of concern were detected in any of the samples. No volatile organic compounds were detected in the private well samples, but chloromethane compounds at trace concentrations (less than 5 µg/l) were detected in the WEG-1 sample which comes from the Howe Valley School well and is chlorinated. This well serves one family in addition to the school and is located approximately three miles from the landfill site. Based on the results of this investigation the groundwater serving the private and school wells sampled is not contaminated. The analytical data are attached to this report.



COMPLET'D. 7/19/79

ND - None detected at greater than minimum detection limit. (number in parenthesis).  
 NA - Not analyzed.  
 1/ - Tentative identification.  
 2/ - On NNDC List of Priority Pollutants.  
 3/ - Estimated concentration.  
 T - Trace.

ATHENS, GA  
JUNE 1979

COMPLET'D. 7/19/79

ND - None detected at greater than minimum detection limit. (number in parenthesis).  
 NA - Not analyzed.  
 1/ - Tentative identification.  
 2/ - On ERDC List of Priority Pollutants.  
 3/ - Estimated concentration.  
 T - Trace.

PROJECT Howe Valley Hazardous Waste Site, KY CHEMIST W. H. McDaniel REC'D 6/29/79 COMPL'D

SAD No.		79C 1597	79C 1598	79C 1599	79C 160
SOURCE & STATION		WM-1	WMG-1	WIG-1	WEG-1
DATE/TIME		6/27/79 @ 1100	6/27/79 @ 1130	6/27/79 @ 1115	6/27/79 @ 1145
ELEMENT (UG/L)					
Silver	01077	<10	<10	<10	<10
Arsenic	01902	<25	<25	<25	<25
Boron	01022	-	-	-	-
Barium	01007	20	22	48	46
Beryllium	01012	<10	<10	<10	<10
Cadmium	01027	<10	<10	<10	<10
Cobalt	01037	<20	<20	<20	<20
Chromium	01034	<10	<10	<10	<10
Copper	01042	<10	<10	43	36
Molybdenum	01062	<20	<20	<20	<20
Nickel	01067	<20	<20	<20	<20
Lead	01051	<40	<40	<40	<40
Antimony	01097	<40	<40	<40	<40
Selenium	01147	<40	<40	<40	<40
Tin	01102	<50	<50	<50	<50
Strontium	01082	299	264	322	655
Tellurium	01064	<40	<40	<40	<40
Titanium	01152	<10	<10	<10	<10
Thallium	01059	-	-	-	-
Vanadium	01087	<10	<10	<10	<10
Yttrium	01203	<10	<10	<10	<10
Zinc	01092	79	830	238	117
Zirconium	01162	<10	<10	<10	<10
Mercury		<0.2	<0.2	<0.2	<0.2
ELEMENT (MG/L)					
Silica	00956	-	-	-	-
Calcium	00916	50	56	108	45
Magnesium	00927	32	23	12	27
Aluminum	01105	0.3	0.2	0.7	0.3
Iron	01045	<0.1	<0.1	0.4	<0.1
Manganese	01055	<0.05	<0.05	<0.05	<0.05